ENGINEERING NEWS-RECORD

Putting the lid on Pittsburgh's auditorium p.30

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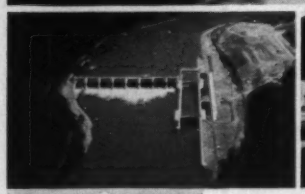

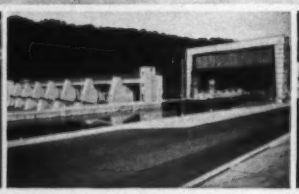

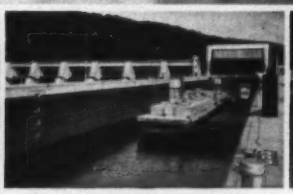

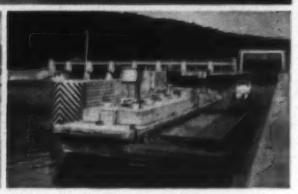

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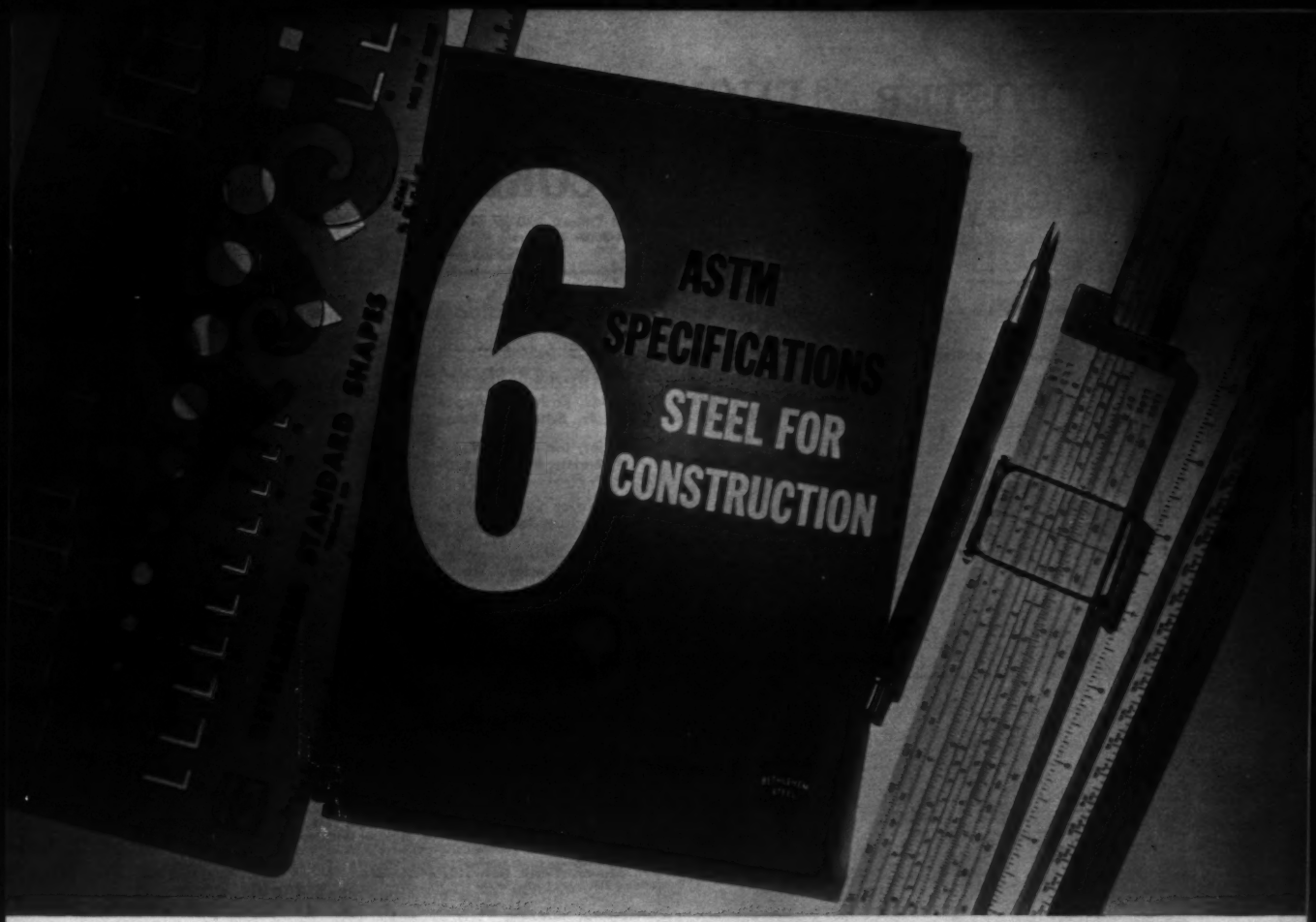

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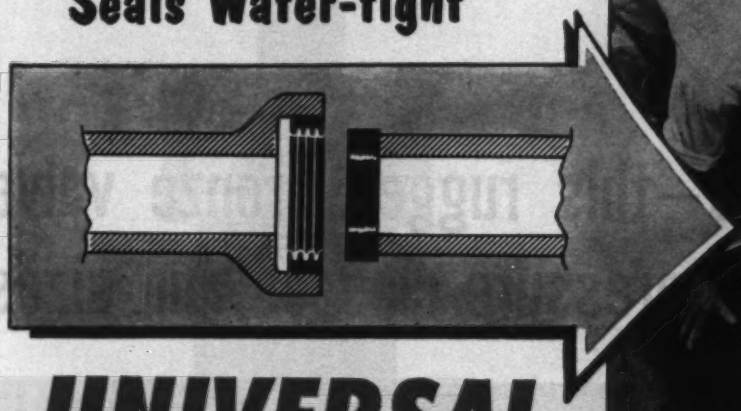

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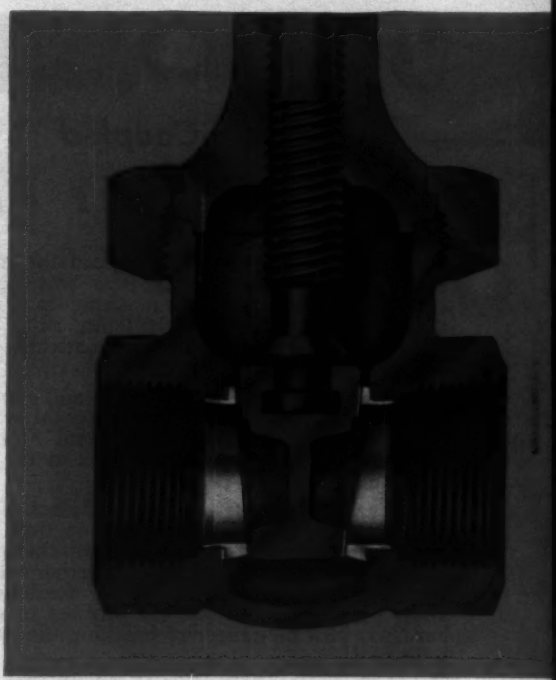

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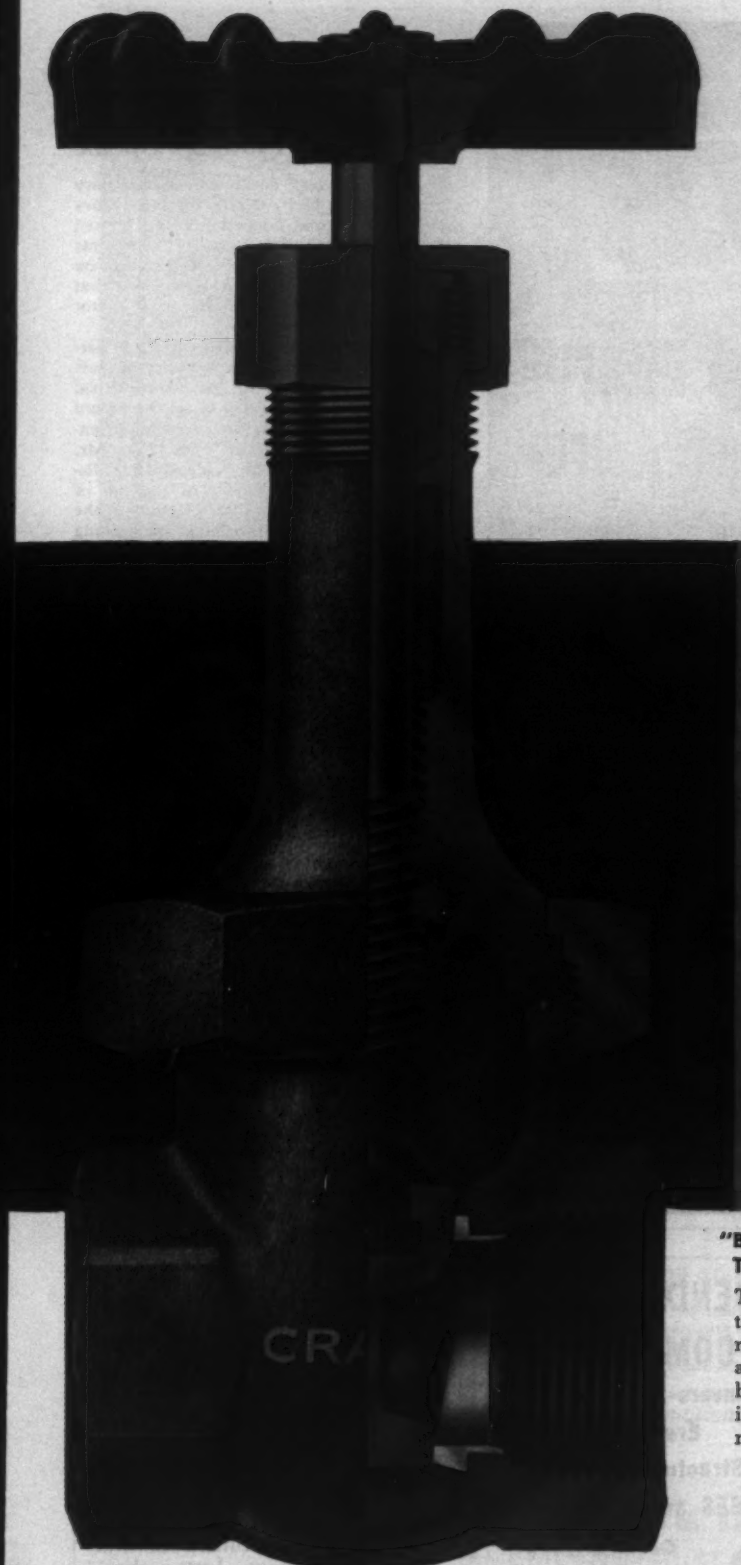

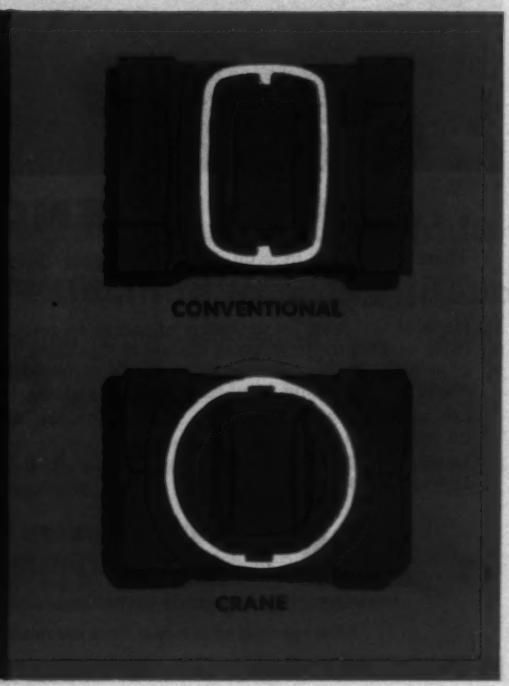

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Reader Comment

Prestress Pioneers Speak

SIR—The very fine historical summary by Editor Fred Merritt on the history of prestressed concrete in the United States (ENR Oct. 6, p. 34) represents a tremendous amount of research on this subject but is so all-inclusive that it is not surprising to see some minor errors in the record.

One small item in which I am personally involved (and I hope the personal note will not be misconstrued since I am only trying to set the record straight) concerns the paragraph entitled "Headed wires" (p. 37). Mr. Merritt reports an independent discovery or development of the use of such an item in 1951 including the simplification of wedging or jacking with results therefrom by the Prescon Corporation of California and by the B. B. R. (Swiss) System.

I assume that the ENR files are available to you and if you will read an article entitled "Prestressing Cuts Home Building Costs" (ENR Sept. 14, 1950, p. 41) you will note that the headed or button type prestressed wire was tested in 1949 in New York and used early in 1950 in the construction of a number of prestressed houses in Israel.

Following the publication of this article, a considerable correspondence with people in the United States and foreign countries indicated considerable interest in this development and since a headed wire had been used for many years in concrete form ties, I saw no reason for trying to patent the scheme, even though requests for representation of patent rights of this idea came from Canada and France.

This detail in prestressing was mentioned, but not the subject of a special paper at the 1951 MIT meeting. Among others, Professor Eney of Lehigh reported on some tests on this headed and threaded wire made in his laboratory.

I do not know whether the two references in Mr. Merritt's paper resulted in the issuing of patents for a headed or button type prestressed wire, but if the patents were issued, they certainly were not valid since this was not a new idea even in 1949. In addition to the publication in ENR, the details were also published by POPULAR SCIENCE in 1951 and I personally

(*Reader Comment cont. p. 10*)

Engineering News-Record welcomes expression of opinions from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance. Letters should be addressed Editor, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

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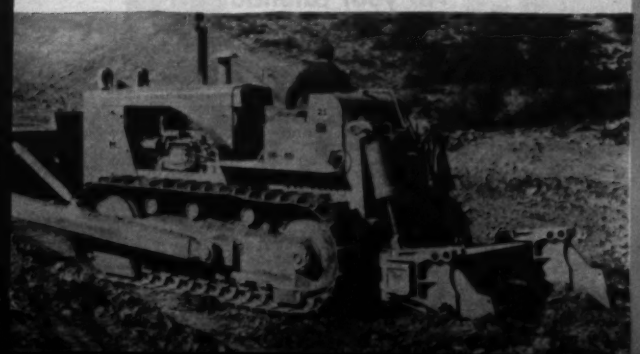

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. . . Reader Comment

must have discussed these features in lectures at at least a dozen engineering schools so that the information should have been fairly well known.

JACOB FELD
Consulting Engineer
New York City

SIR—I was quite impressed with your issue of October 6, and particularly with your article "The Infant Is Growing Up" (p. 34). It is a most descriptive review of the record compiled by the prestressed concrete industry.

Of course, it is very difficult to prepare such an article without inadvertently omitting mention of a number of individuals who have had a great deal to contribute to the growth of an industry. There is no doubt in my mind, for example, that William E. Dean, Jr., who is now Assistant State Highway Engineer (Structures) for the State of Florida, did much to stimulate the acceptance of prestressed concrete design for the Sunshine Skyway, which in turn sparked the development of the industry in Florida. It might be well to note that Charles C. Zollman, who at that time was Design Engineer for the Preload Enterprises in New York, assisted Mr. Dean and his staff in design for this impressive structure.

Another milestone in the increasing use of prestressed concrete for bridge construction was, of course, the Walnut Lane Bridge, which was designed by Philadelphia's Bureau of Engineering, Surveys and Zoning, also assisted by Mr. Zollman.

I cannot help but feel that mention of Preload Enterprises should have been made, for it was through that company's efforts that prestressed concrete was used for the Sunshine Skyway, the Walnut Lane Bridge and a large number of tank structures, and this provided the impetus which was then much needed by the infant industry. I might add that the concerted efforts of the John A. Roebling's Sons Corp., of Trenton greatly encouraged the Preload people, and without Roebling's expressed faith in the new material it is doubtful that the infant would have been as far along toward maturity today.

M. SCHUPACK
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The frame supports short span, lightweight concrete slabs reinforced with USS American Welded Wire Fabric. Each slab is 8′0″ long and 4″ thick. When asked why the fabric-reinforced short-span design was selected for this structure, W. B. Scofield, partner in the structural engineering firm of Edwards & Hjorth, said "This system provides first-class, fireproof construction with a long record of satisfactory service in addition to its proven economy, speed of construction, and occupancy flexibility."

USS American Welded Wire Fabric was also used to reinforce the concrete fireproofing encasement of the columns, girders, and beams. Fabric is excellent for this application because the small, closely spaced members reinforced this thin concrete best. In addition, fabric is easily shaped to fit the contours and is sufficiently rigid to maintain the required shape.

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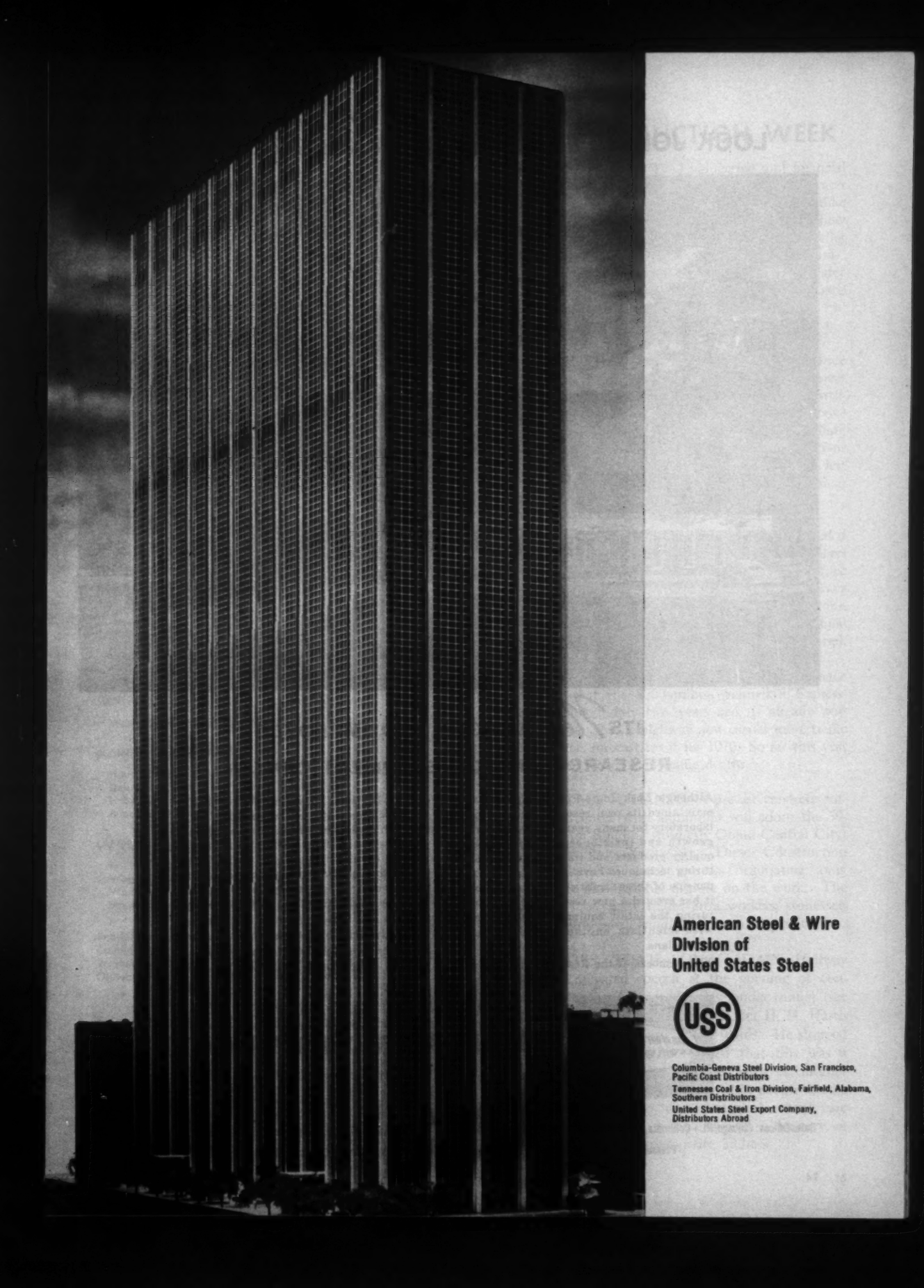
Short-span fabric-reinforced floor system in Rockefeller Center's Time & Life Building. American Welded Wire Fabric was furnished in long rolls and merely unrolled perpendicular to the beams and on top of the forms. It was draped from the top of the slab over the beams to the bottom of the slab at mid-span. Thus, the reinforcement is in position to best resist both positive and negative moments. The economy of steel placement is apparent. In total, over six million square feet of short-span slabs reinforced with Welded Wire Fabric have been used in New York's Rockefeller Center.

Owners: Rockefeller Center, Inc. and Time Inc.
Architects: Harrison & Abramovitz & Harris
Structural Engineers: Edwards & Hjorth
General Contractor: George A. Fuller Company
John Lowry, Inc.
Fabric Distributor: Fireproof Products, Inc.



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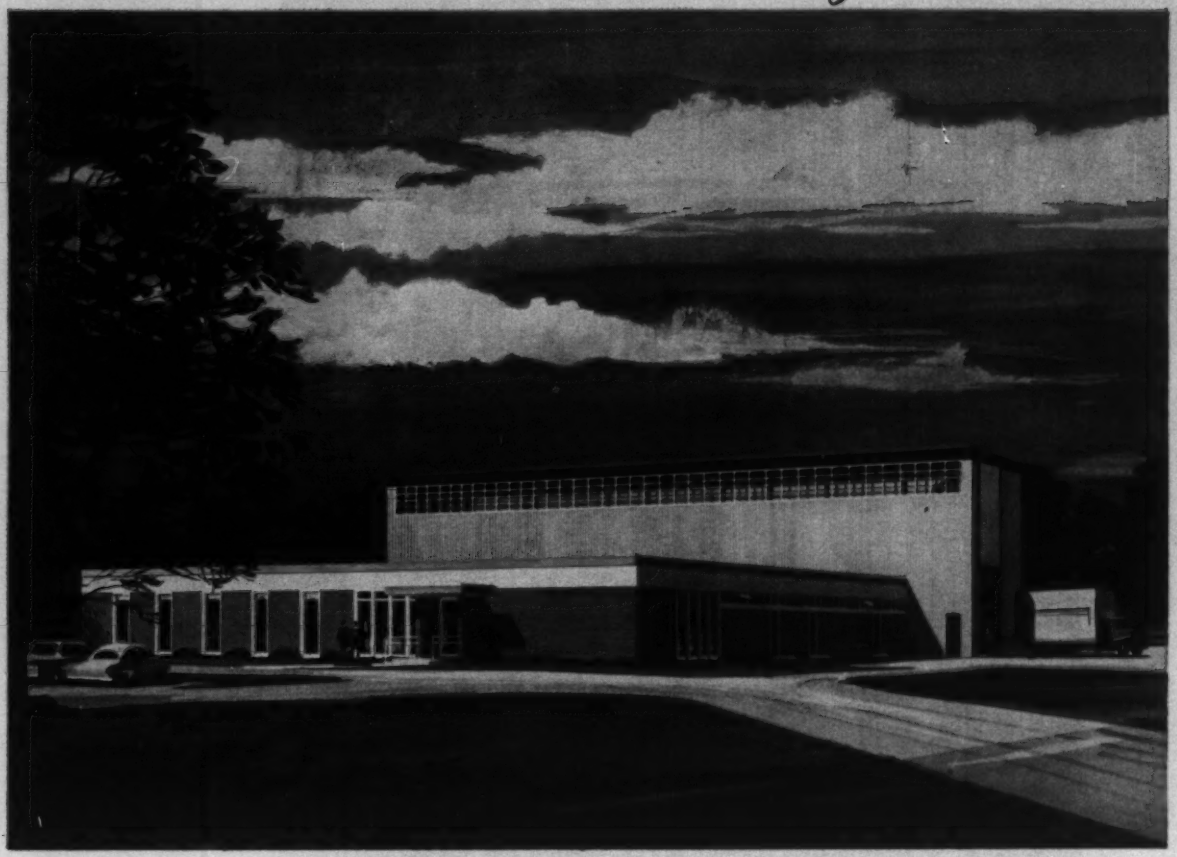

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ENGINEERING NEWS-RECORD

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THE CONSTRUCTION WEEK

IS EVERYBODY HAPPY?—Engineering and financial feasibility reports on California's ambitious water resources plans were hailed by friend and foe alike last week. Gov. Edmund G. Brown said they show the opponents are wrong. State Senator George Miller said they prove the program "is not financially sound." The SAN FRANCISCO EXAMINER headlined: "Water Plan Sound, Say Experts." The SAN FRANCISCO CHRONICLE reported: "State Water Plan Called Impossible." For ENR's interpretation, see p. 23.

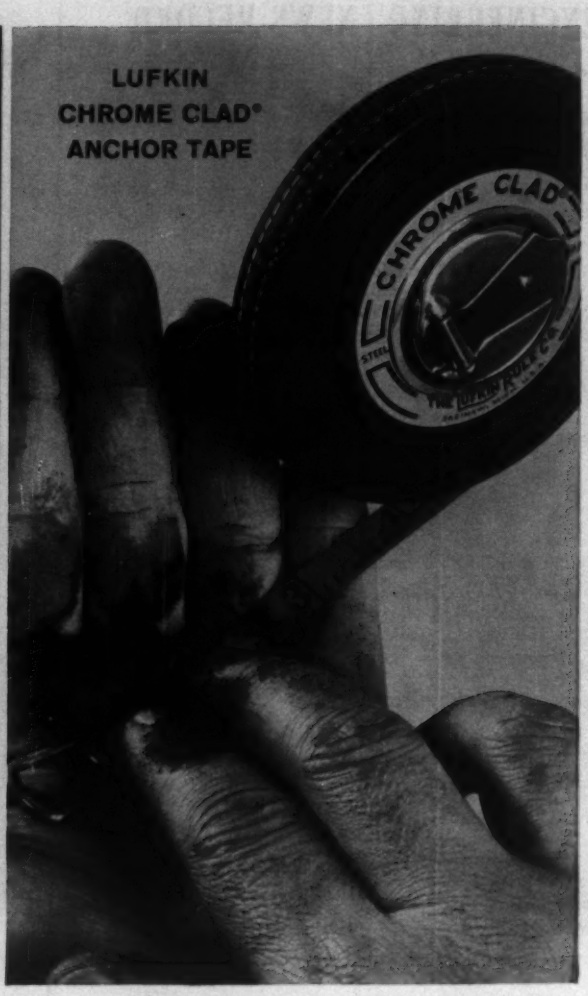
DAM SLIDE KILLS FOUR—An engineer and three construction workers at Newell Creek Dam, near Santa Cruz, Calif., were killed last week in an earthslide. Silt stone rock in the right abutment above the dam crest gave way while workers were drilling final holes for a grout curtain under the impervious core. The fill at the right abutment had been left low because the rock was taking more grout than expected.

CARPENTERS GUILTY—An Indiana jury returned a verdict of guilty last week against three top officers of the carpenters union—including president Maurice Hutcheson—on charges of bribery and conspiracy relating to Indiana highway right-of-way acquisitions. Sentencing was set for November 28, but the final outcome may be postponed by demands for a new trial.

TOO MUCH TOO SOON—Philadelphia officials have discovered that the $200-million Schuylkill Expressway, completed only two years ago, is already outmoded. The 22-mile highway now carries more traffic than planners forecast for it for 1970. So far this year it's been the scene of 18 traffic deaths.

ONE FACE, MANY HANDS—A precast concrete curtain wall accented with aluminum will adorn the 59-story Pan Am Building (formerly Grand Central City) going up in New York City. Diesel Construction Co., the builders, spent months negotiating away any possible jurisdictional dispute on the work. The result: Three separate trades—iron workers, stone setters and masons—will handle and erect the panels.

THERE GOES THAT SONG AGAIN—Halfway through a prepared speech at the opening of construction on the Chesapeake Bay bridge-tunnel (see p. 22), Virginia Highway Commissioner H. H. Harris noticed a strange familiarity in his words. He stopped in mid-sentence when he realized that this was a speech he delivered the previous week at another occasion. He apologized to the 1,100 people in the audience and began to hunt through his brief case for the proper speech. Unable to find it, he gave an extemporaneous, but appropriate address.



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WASHINGTON OBSERVER

- How to interpret the early returns
- Delay sought on Nez Perce vs. High Mountain Sheep

● **Here's what to look for when the first returns begin to come in next Tuesday night.**

The city vote—results from New York City, Philadelphia, Boston and Baltimore will show first. Democrats hold a big edge in organization and number of registered voters in all these Eastern Standard Time cities, but returns from the smaller towns and the rural areas normally are dominantly Republican.

Overwhelming Democratic majorities (at least 600,000 in New York, for example) would be required to justify prediction of a Kennedy victory in the state early in the evening.

The religious and minority vote is worth watching. Both camps agree that predominantly Catholic precincts will go for Senator Kennedy. But watch national groups in such places as Cleveland and Chicago. Polish-Americans are warmed by Vice President Nixon's posture regarding Poland, his visit there, and his speeches to them. Negro areas in New York, Chicago and Detroit will give a tip on that racial group's cohesion or lack of it throughout the country.

The farm vote comes in later; in New York, about 9 or 10 p.m., much later in the Midwest. The big Ohio electoral prize, 25 votes, will still be contested after Cleveland, Toledo, Akron and Cincinnati results are in. The more sparsely populated farm states—Kansas, the Dakotas, Nebraska—probably won't have too much effect on the outcome.

For how the South will line up, keep an eye and ear alert for Atlanta, Ga., Charlotte, N. C. and Charleston, S. C. Any break to Mr. Nixon ought to come early enough to indicate how much, if any, of the South bolts.

In the public works states Portland, Ore., normally Republican, is the city to watch to see whether the Democratic strength developed in the last six years still exists. If so, Mr. Nixon would be in trouble in the Northwest.

California stands alone. But returns will come late, and the results will count only if the candidates are in a race to the wire.

Control of the House of Representatives can be predicted if an early urban trend develops. Should Mr. Nixon roll big in the eastern cities, the Republicans will have a chance to win the House (the Senate is beyond capture). But a GOP landslide would have to be evident; the Republicans have to overcome a near 100-seat solid Democratic delegation from the South. An early Kennedy edge, of course, would make a continued Democratic Congress a certainty.

—

● **FPC examiner William C. Levy will rule this week on a motion to delay hearings on the conflicting Nez Perce and High Mountain Sheep hydropower projects until January 9.** The Washington Public Power Supply System (Nez Perce applicants) claimed earlier this week that:

The date for hearings to begin—November 4—is too close to prepare revised presentation of their case in the light of numerous motions to strike testimony.

The recently proposed agreement with Canada to add up to 1.7-million killowatts of prime power in the U. S. on the Columbia River relieves any need to rush the case (ENR Oct. 27, pp. 19 and 21).

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```
BEGIN ⑤
R = 10 ⑤
F = 60 ⑤
L = .2 ⑤
FOR E = 100(50)300 BEGIN ⑤
FOR C = .00002(.0000001).000021 BEGIN ⑤
I = E/SQRT(R ↑ 2 + (6.2832 * F * L — (1/(6.2832 * F * C))) ↑ 2) ⑤
PRINT (FL) = E ⑤
PRINT (FL) = C ⑤
PRINT (FL) = I ⑤
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foundation work went smoothly, but there are design woes as . . .

'Big Ear' Falls Two Years Behind

Design problems are plaguing the Navy as it tries to get construction of its 600-ft-dia radio telescope under way at Sugar Grove, W. Va. It has already pushed back the completion date from 1962 to 1964; cost estimates have zoomed from $79 million to nearly $115 million with more boosts possible.

The big problem as the detailed designs are made is extra weight. First estimates put the total weight of the structure at around 28,000 tons. But the designers now say it may run nearly 50% higher.

The Navy will soon have to decide on the final design. It will probably look to the high-strength steels, such as AT-242 or T-1, to reduce weight in the structure. (Now, 373 steel is being used primarily.) And some redesigning of the superstructure area may be done.

The "big ear" will remain basically the same in appearance. No configuration changes are planned for the turnable, elevation wheels or reflector area.

Until the final weight of the structure is determined, however, design is virtually at a standstill, forcing the prime contractor, Tidewater-Kiewit and Patterson-Emerson-Comstock, to slow down on construction. Detailed design has only been done on the turntable section. Even there, some on-site changes had to made. On 10 big steel members, for example, lacing angles had to be removed and solid plates welded on to strengthen them. All told, it took the American Bridge Division of U. S. Steel, the steel contractor, about a month to make the change.

Design has not been the only snag, however. In-plant construction of some of the large structural sections has also caused problems. Baldwin-Lima-Hamilton, subcontractor for many big steel items, had to rework some 24 steel box sections, approximately 10 x 10 ft and 30 ft long that will be joined to form the truck girders on each corner of the radio telescope. The problem came in welding internal 2½-in.-thick steel diaphragms in position and keeping the close tolerances required.

Just where blame for the snags lies is a controversial point. Navy chose to start construction before final designs were worked out. This obviously, was a calculated risk taken to hurry along completion time.

Now that snags have developed, however, the decision to start early is becoming the whipping boy. Navy is caught in the squeeze. It can't come out and defend itself because the project is wrapped in a security mantle. The mammoth radio telescope will be used mainly for top secret military communications work.

Regardless of where the blame lies, the program has already slipped two years behind with work just started.

Construction on the Sugar Grove project was started in September 1958. Since then, some 1.5 million cu yd of earth have been moved in excavating and clearing the construction site, 17,089 cu yd of concrete have been placed, and 623 tons of steelwork erected.

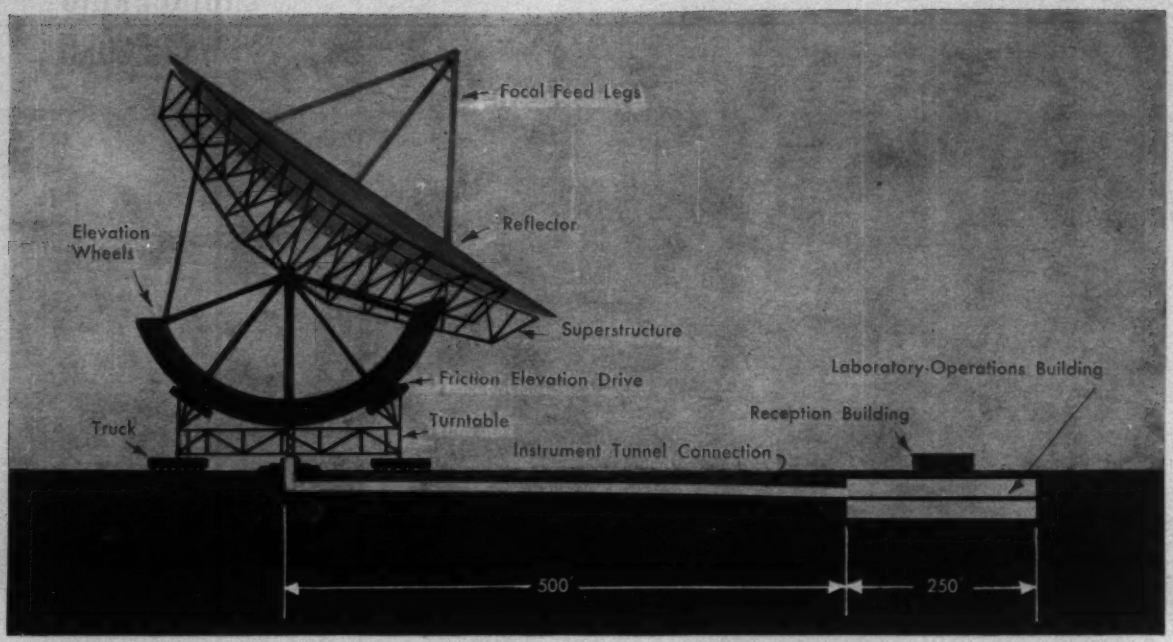
All the reinforced concrete foundation work is in place. Two steel sections of the turntable are in position on falsework.

The giant 550-ton pintle bearing assembly is partially installed. Work has started on a 55,000-sq-ft, two-story operations laboratory, which will be underground about 500 ft from the center of the radio telescope; a 300,000-gal concrete water reservoir has been completed; work has started on a 15,000-kva power plant; a temporary on-site plant that will be used to fabricate the 7.1 acres of aluminum mesh lining required for the 600-ft-dia reflector is under construction by North American Aviation, subcontractor for the aluminum work.

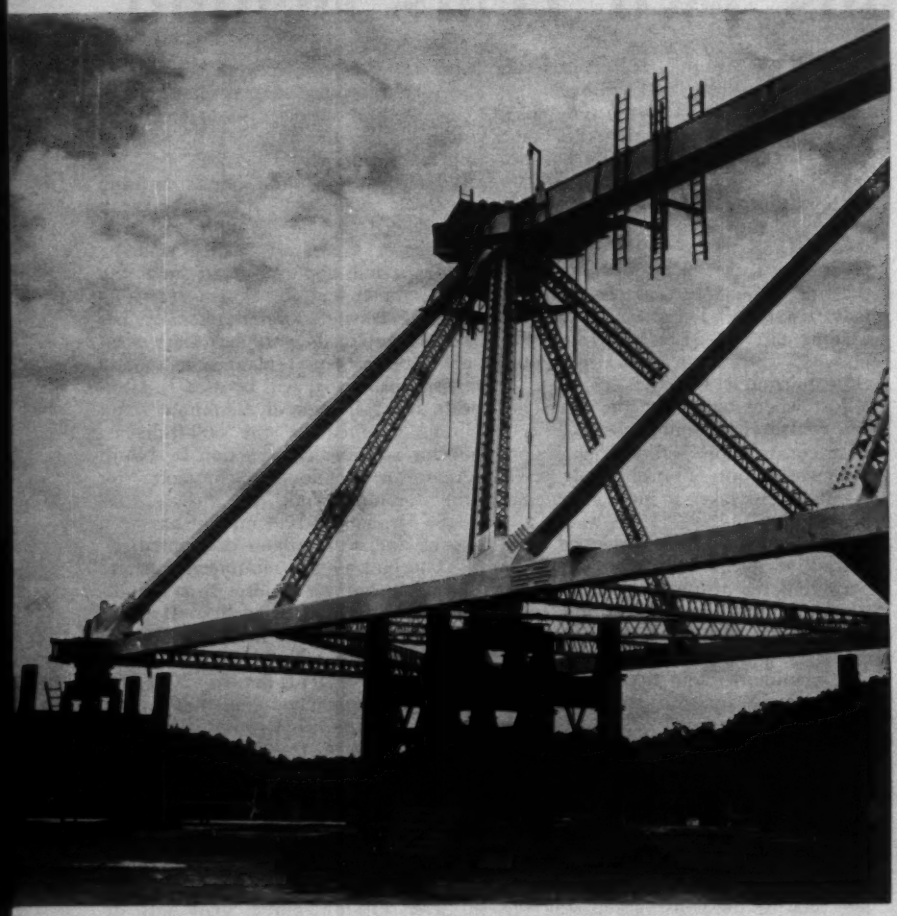
So far, some $10.4 million has been spent and $40 million contracted.

The bulk of the reinforced concrete installed has gone into two foundations (13 ft 6 in. wide by 6 ft deep) for two concentric monorail systems on which the radio telescope will revolve, and a 95-ft-dia by 20-ft-deep reinforced concrete foundation for the pintle bearing. The 550-ton bearing is designed to transfer a horizontal wind force up to 12.7 million pounds from the structure to its foundation. It is the largest such bearing ever built, and cost over $1 million. Installed tolerance on the bearing is 4,000th of an inch.

The 116-ton pintle shaft was delivered to the site this week. It is the



All buildings will be underground to shield against electronic interference.



Steelwork can't go up until corner sections arrive.

heaviest single piece of equipment to go into the telescope. To move the pintle shaft the 53 miles by truck from the railhead at Petersburgh, W. Va., to Sugar Grove some 52 highway structures had to be reinforced and one low water crossing built.

Here is the new schedule laid out for completion of the Sugar Grove project. By next February the turn-

Truck hauls half of the pintle

The underground operations laboratory will be surrounded by 2 ft of compacted coke.

table will be completed except for installation of drive mechanisms. By October the power plant structure will be completed. By November the reinforced concrete shell of the laboratory will be completed. And at the end of '61 the elevation wheels will be erected and the first aluminum panels fitted in the reflector surface.

In 1962, erection will be started on the three 300-ft focal feed legs; drives for the turntable trucks and the elevation wheels will be installed; construction of the superstructure will be started.

By mid-1962, work on the operations laboratory will be completed. By August 1962, fabrication of the 216 aluminum sectors lining the reflector will be completed. Final installation of all sectors is expected to be completed late in 1962 or early 1963. By December 1962, six 2,500-kva dual fuel diesel-natural gas generators will be installed in the power plant.

All steel work will be completed in 1963. Operating controls, wiring, etc, will be installed in the telescope and check-outs started.

Here's how the steel will go up. Two

shaft base to the site . . .

. . . where it is lowered into position.

working towers, 425 ft high and 90 ft on each side, have been built on 90-ft-long tracks to handle the steel erection. They will be outfitted with 150-ton lifts. A 125-ton crawler crane will also be used. The largest weight that will be hoisted into position is expected to be a 100-ton gear mechanism for the elevation wheels.

Completion of the turntable assembly is the next construction level. Work on this will be stepped up within the next couple of weeks. Right now, only 10 of the 200 or so workers on the site are iron workers. Fifty more are due to arrive this month. By 1962, there will be 150 iron workers on the job.

The next major items to be installed will be the two elevation wheels. Each wheel is comprised of two steel arcs approximately 450 ft long and 34 ft wide and some 50 ft apart. They are tied together with a truss arrangement.

Erection of each arc will be done in three layers. Individual sections of each layer are 40 x 11 ft, and weigh about 30 tons. The steel men aren't sure if they will bolt the elevation wheel sections together or weld them in place. If bolts are used, it means that the connecting surfaces would have to be milled smooth before additional sections could be added.

Once the elevation wheels are in place, work will start on the superstructure. This will start to give contour to the reflector dish and allow installation of the aluminum mesh liner to begin.

The aluminum liner sections consist of ⅜-in. mesh tack welded on to 11-ft-high aluminum tubing structures. The liners will be fabricated in triangle shapes. Then two of these will be joined on the ground to form rectangles approximately 55 x 30 x 11 ft, but varying in width to fit the contour of the dish.

The liner panels will be joined in position through a hinge arrangement with the aluminum tubing bolted to the steel superstructure. In all, some 1,500 tons of aluminum will be used in the liner with individual panels weighing about eight tons. As the reflector takes shape, some of the panels will have to be high-lined into position, using booms on one focal feed leg and one construction tower.

Concurrent with the installation of the liner panels, work will start on erection of the three 300-ft focal feed towers. These towers will weigh some 240 tons.

This job is considered by the steel men to be the most difficult part of erecting the radio telescope. Because of the lifting problem, the legs will be built on falsework with one or more of the three legs fitted with booms. Estimates are that it will take about two months to do the job.

Approximately 90% of the steelwork on the radio telescope will be bolted into position, with the balance welded into place. Some 900,000 high-strength bolts, largely 1⅛ in. dia will be used.

Work Starts on Chesapeake Crossing

The metallic rhythm of a pile driver echoing over the gray-green waters of the lower Chesapeake Bay last week signaled the start of construction on the world's longest bridge-tunnel project.

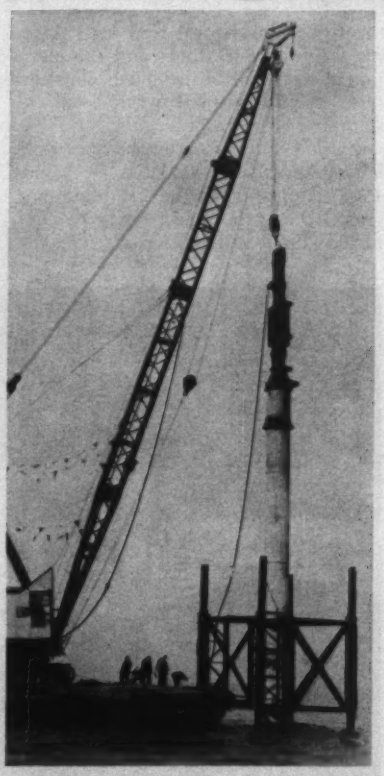
A barge-mounted pile driver rammed a 120-ft prestressed concrete pile to bedrock in a watery ground-breaking ceremony to initiate work on the 17½-mile, $200-million Chesapeake Bay bridge-tunnel project. When it's completed in late 1963, the bridge-tunnel route will link Norfolk, Va., with the Delmarva Peninsula where Chesapeake Bay meets the Atlantic Ocean (ENR Aug. 11, p. 27).

The bridge-tunnel job will consist of 12 miles of low-level trestles; two bridges over navigation channels, one 1,356 ft long and the other 3,795 ft long; tunnels under two major ship channels, each of them about a mile long; five miles of approach highways, and four man-made islands that will serve as bases for depressed approach ramps to the two tunnels.

Four heavy construction companies will build the combination of tunnels, causeways and bridges under a joint venture: Raymond International, Inc., New York City; Merritt-Chapman & Scott Co., New York City; Peter Kiewit Sons' Co., Omaha, and Tidewater Construction Corp., Norfolk.

The venture has a $116.5-million construction contract with Chesapeake Bay Bridge and Tunnel Commission for the work. Tidewater is the sponsoring company. John R. Liles, a Tidewater vice president, is project manager.

MC&S's part in the project will be construction of the two tunnels by the trench-tunnel method and the four islands. The other three companies will handle the rest of the work, including the interior finish of the tunnels.



ONE DOWN and 3,000 to go is pile-driving score for the Chesapeake crossing.

The 54-in.-dia hollow concrete pile driven at last week's ceremony was one of six test piles that will go in at various spots in the bay. Driving of actual construction piles will begin in March.

Because of the heavy waves and high winds at the entrance of the bay, the builders have decided not to use floating barges for pile driving. They'll employ a variety of Texas Tower.

Tidewater-Raymond-Kiewit will design and build a barge that will be a self-elevating mobile platform. Once in position, the platform's legs will lower to the bottom of the bay and raise the platform above the reach of waves.

A large crane mounted on this platform will be able to sink the three piles that make up each bent. When these are down, the platform will lower itself and move 75 ft down the line to the location of the next bent. The builders will sink the piles through a combination of driving and high-pressure water jetting. By working two shifts, the contractors hope to drive an average of six piles per day.

The job will require 3,000 prestressed concrete piles, 55,000 tons of steel and 550,000 cu yd of concrete.

The bridge-tunnel route will provide the final link in the ocean highway between New York and Jacksonville, Fla., and will reduce driving time between those two cities by 90 minutes.

Sverdrup & Parcel of St. Louis are consulting engineers for the job and will supervise its construction.

A $200-million tax-exempt revenue bond issue of the Chesapeake Bay Bridge and Tunnel District will finance the project. Revenues are expected to be sufficient to retire the bonds by 1983.

Reaction to Columbia Agreement Mixed

The U.S.-Canada Columbia River Agreement drew mixed reactions in the Pacific Northwest last week, both north and south of the border.

British Columbia was jubilant over the soon-to-be treaty. A feeling that all of B.C.'s hopes for an early start of the $1-billion development would materialize sparked the enthusiasm at Vancouver.

The B.C. Power Commission, the provincial utility charged with Canada's $450-million share of the program, expects preliminary construction to start next year.

All Canadian projects reportedly will start simultaneously after the signing of the treaty—hoped for in 1961.

Although the Canadian government may pay half the costs for the dams, there is growing feeling that the province could go it alone. This would be possible if B.C. could bolster her downstream benefits, already outlined in the agreement, with profits from the sale of surplus power to the U.S. There is enough latitude in the proposal to allow this export of power assuming approval by Canada's National Energy Board.

Downstream Columbia power delivered in Vancouver at rates 46% lower than today's rates was news well received on Canada's West Coast. But a somewhat sour note was sounded by W. C. Mainwaring, president of Peace River Power Development Co., who said these low rates were unrealistic.

While asserting that the Columbia go-ahead won't affect Peace River plans, he said power rates won't be that low "not when you spend $450 million to get 1,250,000 kw and when carrying charges alone would be $45 million annually."

In this country George Brunzell, president of Washington Water Power Co.—one of several private utilities that comprise the combine planning High Mountain Sheep Dam—has reservations on the treaty.

No one can argue over the treaty's objectives—additional power and flood control benefits for the Pacific Northwest, he admits.

But, he says, the treaty does create problems for some operating utilities that have not been given adequate consideration.

Citing the possible delay of the Middle Snake River developments at Nez Perce or High Mountain Sheep, the utility head notes that, "Due to the priority accorded Canadian water storage projects, some projects in the U.S. might be made so uneconomical as to preclude their construction."

Mr. Brunzell said that postponement of a project like High Mountain Sheep because of the Columbia River treaty would mean the loss of considerable time and "many millions of dollars" in preliminary planning and development.

Benefits available to the U.S. through the proposed treaty ". . . will not be equitably distributed among all the generating utilities in the Northwest," Mr. Brunzell said, although "there have been indications that the Department of the Interior will be willing to work out these inequities. . ."

In contrast, officials of both the Grant County and Chelan County public utility districts in Washington praised the Columbia River agreement. It is estimated that the Canadian storage projects could add more than 400,000 kw of capacity each to the output of Chelan PUD's Rocky Reach Dam, and Grant County PUD's Priest Rapids and Wanapum dams.

The Douglas County PUD feels the treaty arrangement could mean a boost of 200,000 kw for its proposed Wells Dam. Prospects for early financing and construction of Wells Dam are good, according to a PUD official. He said the PUD expects to file application for a Federal Power Commission license later this year. Construction would start about four months after power contracts are completed and the FPC license is granted.

A Bureau of Reclamation spokesman at Grand Coulee Dam said the added Columbia storage definitely brightens the prospect for a third powerhouse there.

Spokesmen for both Grant and Chelan PUDs indicated that space was available for additional generating units at Priest Rapids, Wanapum and Rocky Reach powerhouses.

Montana's Sen. Mike Mansfield, Democratic whip, anticipates wholehearted approval in the Senate of the proposed treaty President Eisenhower will send to Congress before he leaves office in January.

More Support for Big Water Plan

Engineering and financial consultants have confirmed preliminary support indicated last summer for California's water resource construction proposal. But the final endorsement is more reserved.

The major change brings Eel River development into the picture in 1980. This results from a finding by engineering consultant Charles T. Main, Inc., Boston, that the San Joaquin-Sacramento River delta area will run out of water for export to the south in less than 30 years.

Both the Main firm and the financial consultant, Dillon, Read & Co., Inc., New York, re-emphasize that costs—hence, financial feasibility—are based on 1960 levels without future escalation. They warn that future price increases might change the financial picture.

The two reports were released by California's Governor Edmund G. Brown almost on the eve of a state referendum on a $1.75-billion bond proposal that would provide most of the money for the construction program. The state released interim reports last summer (ENR July 28, p. 23).

The Main report still contends there is enough water in the delta for immediate needs so that construction of Oroville Dam can be postponed. The report suggests starting an eight-year Oroville Dam construction program in 1974 and an eight-year Eel River program in 1980.

The over-all program is planned to satisfy the additional water needs of a large part of the state—big areas of the San Joaquin Valley and southern California as well as certain coastal areas. And to make sure the estimated 1990 needs of 3.5 million acre-ft annually are met throughout the bond redemption period—or until the year 2040—additional northern California storage is needed.

The engineering firm selected the Eel River storage from among several possibilities because the California Water Resources Department has made sufficient preliminary studies to allow its consideration.

Cost estimates in the Main report put the Eel River development at roughly $195 million—other elements of the project are estimated more closely at a total of $1.677 billion.

Dillon, Read said the bond issue together with other funds obligated to water development would cover costs except for some $54 million needed after 1984 for final phases of construction. But the report is very careful to point out that this is based on 1960 costs with no provision for future cost increases. Thus there undoubtedly will be need for some further financing for the proposed works.

The bond issue would be sold over a 25-year period starting in 1964. Maximum bond issue in any one year would be $120 million. And the Dillon, Read report indicates that such amounts should be salable.

Atlanta's Tallest Will Be Framed in Concrete

Henry C. Beck Co. of Atlanta has averaged a floor a week erecting a 31-story reinforced concrete frame for the Bank of Georgia building in Atlanta.

Designed by the ultimate-strength provisions of the latest American Concrete Institute building code, the new office tower is one of the nation's tallest reinforced concrete structures. Concrete strengths in the columns increase from 3,000 psi to 3,750 psi and 5,000 psi for the lower floors.

The columns bear on pile-cap foundations supported by concrete-filled, steel shell piles. Floor framing consists of concrete joists formed by metal pans. Concrete is lightweight 3,000-psi mix.

Column-girder bents will resist lateral forces. There are no shear walls. Exterior columns are faced with aluminum sheathing, which forms continuous vertical shafts and breaks the aluminum-and-glass curtain walls into a rectilinear pattern.

Other features of the building are six automatic electronically controlled passenger elevators, and a 1,000-ton air conditioning unit. The air conditioning system requires hoisting a cooling tower of 52-ton operating weight to a mechanical equipment room on the 30th floor.

Associated architect-engineers are Wyatt C. Hedrick, Fort Worth, and Thomas E. Stanley, Dallas.

Water Re-Use Beats Desalting

You can't pin hopes for large-scale water supply on the ocean anytime soon, but water re-use and conservation might be the answer to shortages. This in a nutshell is the outcome of some searching appraisals that were made by two experts.

Abel Wolman of Johns Hopkins University, speaking before the Eastern Water Company Conference, summarized the discussions of a California Institute of Technology Symposium on desalting of water.

Richard D. Hoak of the Mellon Institute commented on industrial water conservation and re-use at a meeting of the Technical Association of the Pulp and Paper Industry.

Both Mr. Wolman and Mr. Hoak asserted that we are not as close to running out of water as some say. They pointed out that water consumption is often projected without considering that most of it is returned to streams for re-use.

"It would be a grave mistake," Mr. Wolman concluded, "to place any degree of hope on finding an early economic solution to water problems in the desalinization of sea water."

Mr. Wolman showed that production costs of desalting processes are high and that costs at the tap are raised further by costs of pumping from sea level, distribution and multiple repumping into service zones, filtration and treatment, waste disposal, holdover storage, and research and development activities.

Costs also vary with local conditions and different processes. Mr. Wolman cited the following production costs per 1,000 gal:

- Aruba—$1.25 to $1.75, sea-water distillation.
- Morro Bay, Calif.—$2.50 at full capacity, sea-water distillation.
- South Africa—under 50 cents, membrane filtration of brackish mine wastes.
- Coalinga, Calif.—$1.43, membrane filtration of brackish water.

"It is not overly optimistic," Mr. Wolman reported, "[to think] that with better and better equipment and more and more successful life for membranes, the production costs [of demineralizing processes] should approach 75 cents or less.

"However," he said, "industrial and municipal production costs [of fresh water] rarely exceed 25 cents per thousand gallons."

Mr. Wolman cited examples: Los Angeles, 3 to 20 cents per 1,000 gallons, even with the long aqueducts; Baltimore, less than 10 cents, not counting filtration and distribution; other localities, under 20 cents for everything but treatment.

"Where fresh water becomes scarce," he suggested, "cheaper alternatives to demineralization are often available." Re-use of natural water, almost universal, will necessarily expand as modes of waste treatment and water purification improve. "Here," Mr. Wolman said, "is a most fruitful field for research and development."

From a report submitted to the Senate Select Committee on Water Resources he cited several areas of potential savings:

- Re-use of sewage plant effluent, as is being done by Bethlehem Steel Co., at Sparrows Point, Md.
- Savings in industrial use. It has been shown that steel can be produced with 1,500-3,000 gal per ton instead of 55,000.
- Savings in irrigation water. The Department of Agriculture estimates that savings by more efficient irrigation practices may run as high as 50 million acre-feet per year.
- Irrigation with treated sewage.
- Control of water-wasting aquatic plants.
- Demineralizing treated sewage.

Mr. Hoak cited other examples of conservation. He said five major industries—metals, chemical, pulp and paper, petroleum and coal, and food—use about 85% of the total industrial water. "These large users also employ water more efficiently," he said. "Each gallon withdrawn is used 1.9 times before discharge; for the pulp and paper industry the figure is 2.6," Mr. Hoak explained. "All other industries," he said, "use their intake an average of 1.3 times."

He cited the case of one company that was able to save $100,000 annually by reducing wasteful usage 40% through the installation of devices that cost $150,000.

Items such as automatic valves that close when a piece of equipment is not operating and spring valves that close when released could save countless gallons of water.

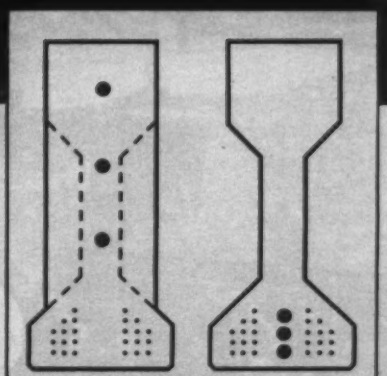
Mr. Hoak concluded, "Water conservation is essential to industrial operations in areas of shortage, but conservation even where water supplies are plentiful is generally economically advantageous."

Mr. Wolman estimated that by 1965 land-based plants for conversion of sea water and brackish water will produce only about 70 million gallons a day.

Compared to the huge quantities needed, "the total effect of desalinization and demineralization on the national and international economy will be minor," he declared.

Aerial view of bridge. Note railroad siding built expressly for handling bridge beams. As work progressed, river was diverted and siding laid over dry bed. Bridge designed by the Nebraska State Department of Roads. John Hossack, Acting State Engineer; G. C. Strobel, Assistant Acting State Engineer; Art Dederman, Bridge Engineer; General Contractor, Massman Construction Company, Kansas City, Missouri. Prestressed concrete members by Nebraska Prestressed Concrete Company, Lincoln, Nebraska.

LOW BIDDER USES PRESTRESSED CONCRETE FOR MAJOR BRIDGE PROJECT



End and center cross sections showing location of pre-tensioning strands and groups of post-tensioning strands in beams.

Massman Construction Company, the general contractor with the lowest bid, elected to furnish prestressed concrete girders rather than the structural steel alternate for the Platte River Bridge near Ashland, Nebraska.

Piers and abutments are supported on 31,000 linear feet of 14-in. octagonal prestressed concrete piles with lengths of 65 to 95 ft.

The 168 precast prestressed I-beams each 110 ft. long are AASHO-PCI Type IV with 7 in. of concrete added to the top flange giving a depth of 5 ft. 1 in. Each beam has 24 straight ½-in. diameter pre-tensioned strands and 36 parabolic ½-in. diameter post-tensioned strands. The parabolic strands are post-tensioned in three groups of 12 each and anchored with a newly developed Freyssinet anchor fitting.

You may not be contemplating a project of this magnitude. You will *save*, though, if you decide on prestressed concrete for almost anything you decide to build. Owners, builders, architects and engineers are finding that the benefits of prestressed concrete are many and impressive. This holds true for motels, stores, schools, churches, office buildings, plants, warehouses, terminals, as well as bridges and piers.

Because Roebling has long been active in fostering this method throughout the country, we have gathered a wealth of material and experience dealing with every phase of prestressed concrete. This includes design data, information on tensioning materials, fabricating methods and, of course, the manufacture of the finest prestressing strand available. For any information on prestressed concrete, contact Roebling's Construction Materials Division, Trenton 2, New Jersey.

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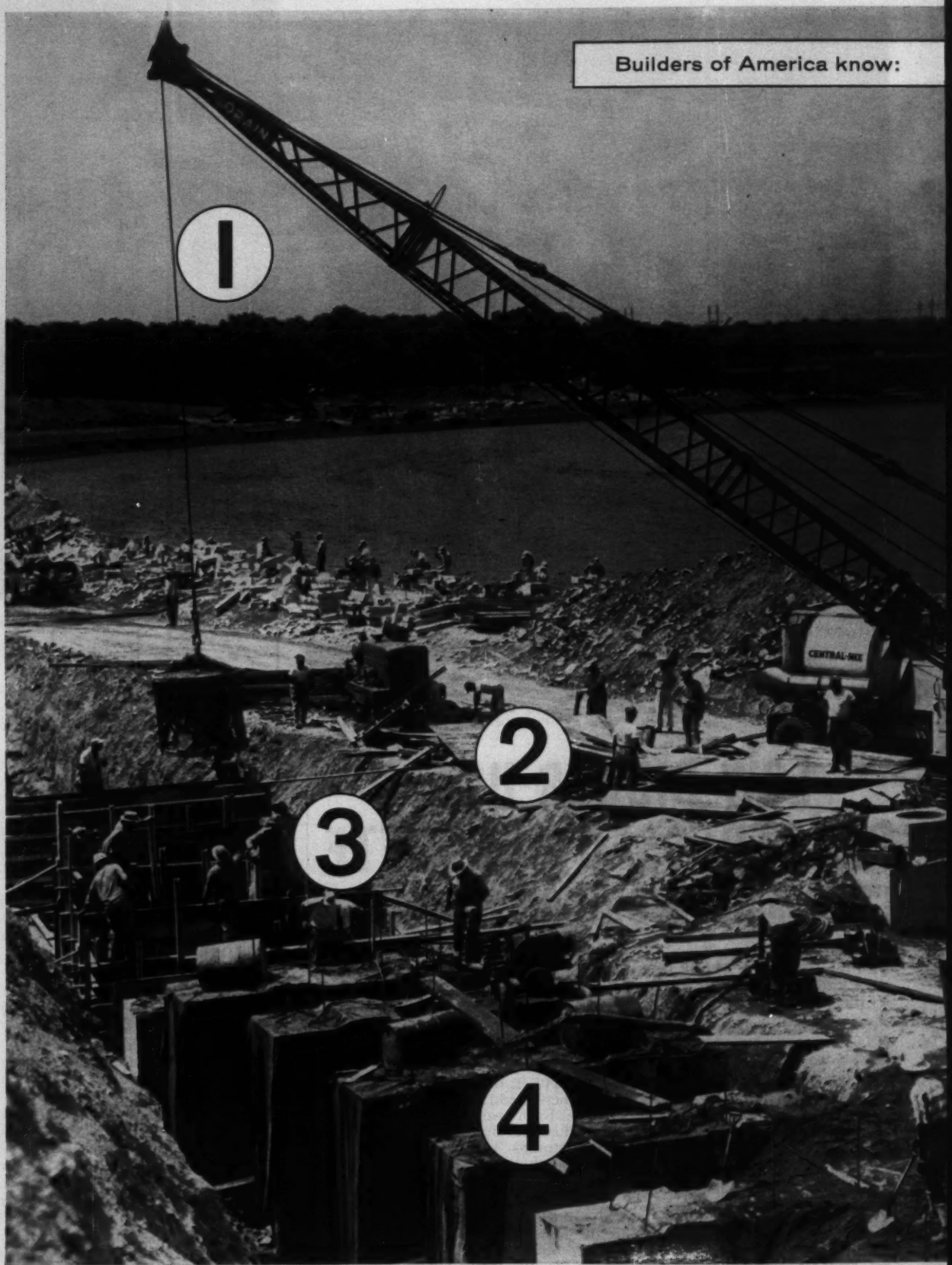
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3. Form collapses
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Around the Country . . .

• **There's a difference**—Girdler Construction Corp. of Louisville has changed its corporate name to Girdler Corp. The firm is a division of Chemical and Industrial Corp., Cincinnati, which acquired it from Chemtron a year ago.

• **No trainees, no plant**—Foster Wheeler Corp., New York City, canceled a $30-million contract with Indonesia for construction of a fertilizer plant in Sumatra because the government had not completed negotiations for training Indonesians to operate the installation.

• **To cross the Yolo**—The California Division of Highways will open bids November 30 for a 5.7-mile, six-lane freeway across the Yolo Bypass near Sacramento. The new route will incorporate two bridges and an embankment located slightly south of an existing causeway. A total of $10.5 million is available for the project.

• **Slowdown in Philadelphia**—Philadelphia's officials are upset because an $18-million section of the city's $50-million Society Hill redevelopment project is stalled for lack of financing. Webb & Knapp, Inc. of New York City, the developer, has put off until February a construction start scheduled for this month.

• **Housing for elderly**—Two recently announced housing projects, a $4.8-million job in Cincinnati and a $3.5-million job in New York City, are designed for the special requirements of the elderly. A smaller project, costing $500,000, will go up in Manhattan's Chinatown section.

• **Cautious expansion**—A $750,000 addition to the Delaware River Port Authority's administration building in Camden, N. J., will have a bomb-proof shelter in the basement.

• **Yankee A-power coming**—The atomic powered generating station of Yankee Atomic Electric Co. at Rowe, Mass., may go on line within a week, according to a Yankee spokesman. Tests have been going on for two months.

• **Airport contract**—Paul R. Reddy, Denver architect, has the design and construction-supervision contract for the expansion program at Denver's municipal airport. Construction costs are estimated at $20 million.

• **County building plans**—Orange County, Calif., will have to spend more than $52.6 million during the next 20 years to meet the demands of its increasing population, reports Welton Beckett & Associates, Los Angeles architects-engineers.

• **From meat to chemicals**—Armour Co., meatpackers, will spend $60 million on chemical plants for its subsidiary, Armour Agricultural Chemical Co.

• **Overseas contract**—Engineering Consultants, Inc., Denver, will design an $82-million dam and power plant for the Public Power Corp. of Greece. The Greek company obtained $31 million toward the project from the U. S. Development Loan Fund.

• **School bonds approved**—Guilford County, N. C., has been authorized to issue $11 million worth of school construction bonds.

• **Railroad outlay**—The merged Erie-Lackawanna Railroad will spend $8 million for an electronic marshalling yard at Buffalo.

• **Dam bridge**—A $5-million bridge will be constructed across the Pickwick Landing Dam in southwestern Tennessee. Construction will start about August 1961. Costs will be shared by the Bureau of Public Roads and the state. Contracts are expected to be awarded in July.

• **Charleston's road plans**—Approximately $60 million worth of highways are planned for Charleston, S. C., and its surrounding area. Preliminary work may start as early as January. Tentative projects include a bridge across Cooper River, a cross-town expressway and extension of Route I-26 into Charleston.

• **Expressway opened**—The $40-million Erie Throughway opened to traffic last week. The 46-mile, four-lane expressway is part of Interstate 90, connecting the New York State Thruway and a freeway near Cleveland, Ohio. The route bypasses Erie, Pa.

• **Outlays for gas**—Texas Gas Transmission Corp., Owensboro, Ky., has filed an application with the Federal Power Commission for authority to build $42 million worth of pipline and compressor stations.

Another Florida Engineer Admits Receiving 'Payola'

A ninth engineer of the Florida State Road Department has admitted receiving money from the Cone Brothers Contracting Co. of Tampa.

The engineer, Joe Maseda, Jr., had denied receiving "payola" when he testified before a legislative committee hearing. Later, however, he told State Road Engineer Al Church that his testimony was untrue.

At Mr. Church's urging, Mr. Maseda made a new statement to the legislature investigators and signed another for Walter May, chief counsel for Rep. John A. Blatnik's House subcommittee on roads, which is investigating bribery allegations.

Eight other engineers had admitted receiving money from Cone Brothers and were fired by the Florida Road Board (ENR Oct. 27, p. 26).

Meanwhile, Cone Brothers has offered its help in proving that its work has fully met specifications and has asked to be restored the right to bid on other state jobs. No action is likely to be taken on this request until investigations now under way are completed.

Long Sentences Meted Out In Italian Building Collapse

Four men held responsible for an apartment building collapse that killed 58 persons in Barletta, Italy (ENR Sept. 24, 1959, p. 30) received jail sentences last week ranging from 15 years, 6 months to 18 years. None will appeal.

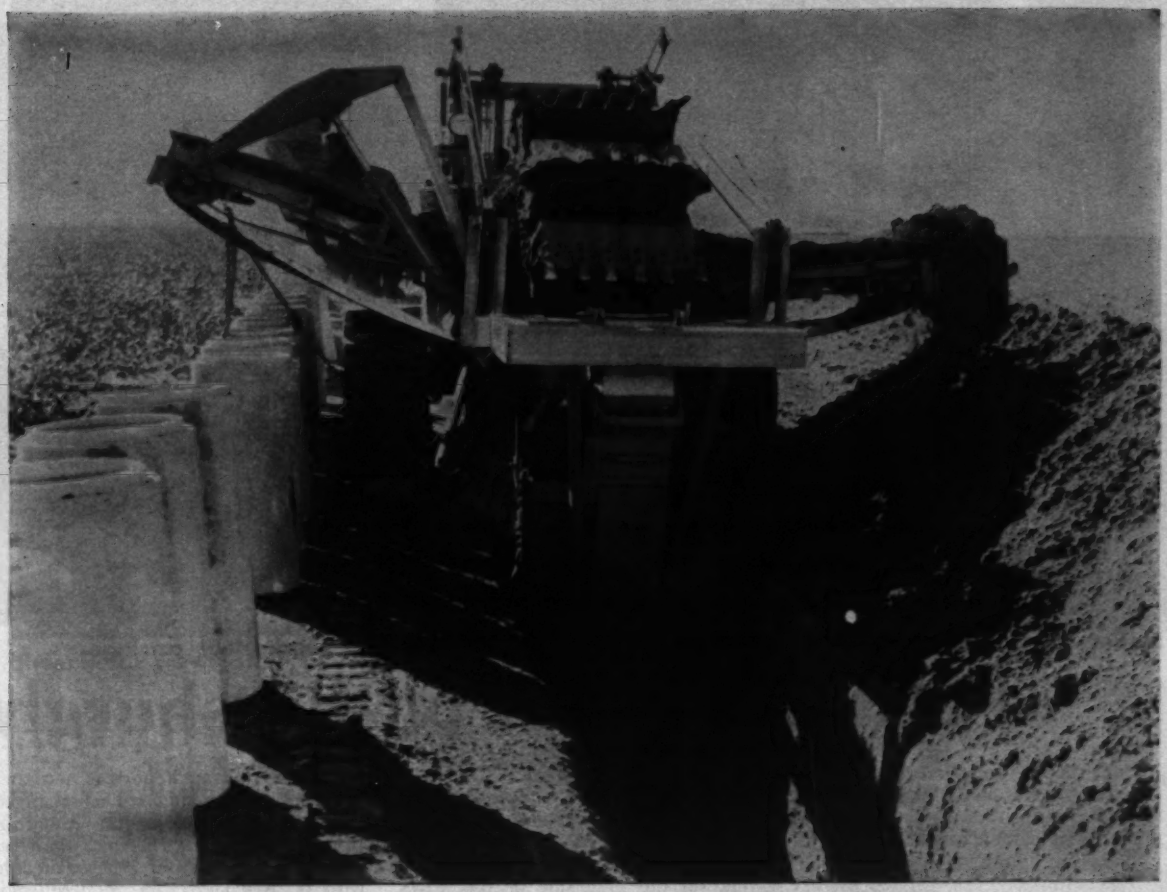
The apartment building, a four-story addition built on top of a one-story garage, collapsed several months after its construction.

The two builders, the structural engineer and a city building official were charged with homicide as well as responsibility for the collapse.

The prosecutor established that the defendants, who failed to evacuate the tenants, had foreseen that the building was in imminent danger of collapse.

During a two-week hearing last summer it was revealed that cracks had appeared in one wall several days before the tragedy occurred. The contractor tried to strengthen the wall by inserting a reinforced concrete buttress, which further overloaded the already-overstressed foundation soil. This redistributed the wall's stresses and hastened collapse of the masonry, according to a prosecution expert.

Also convicted were a go-between who delivered a bribe to the building official and another city official involved in the scandal. Their sentences were relatively light: 27 months for the former, 70 days for the latter.



240 CUTS FAST ACCURATE 34"x 46" TRENCH FOR CONCRETE PIPE

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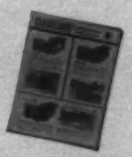

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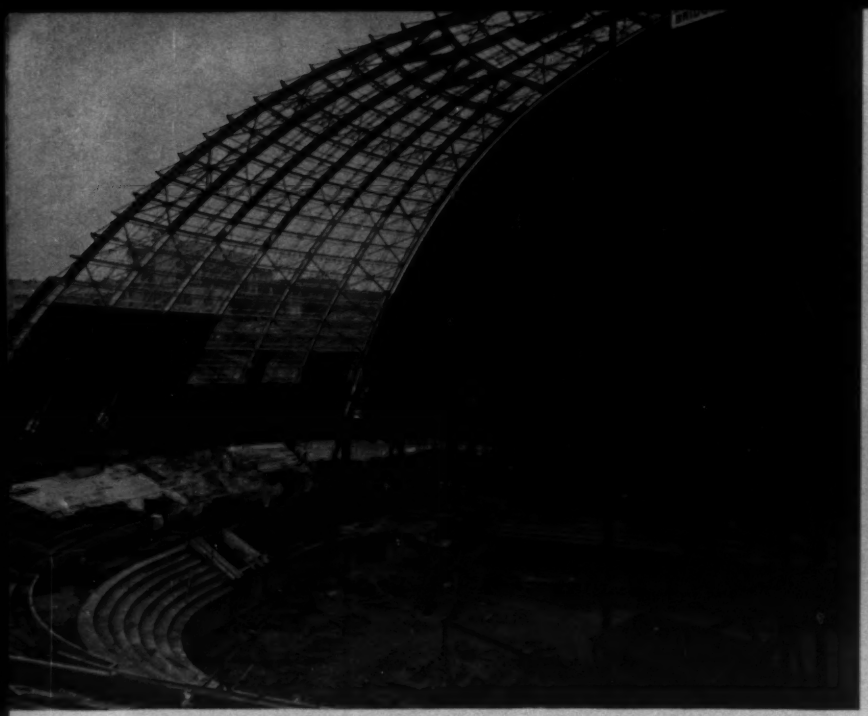


Spiderweb frame of movable leaf gets metal deck first.

Erector checks leaf carriage.

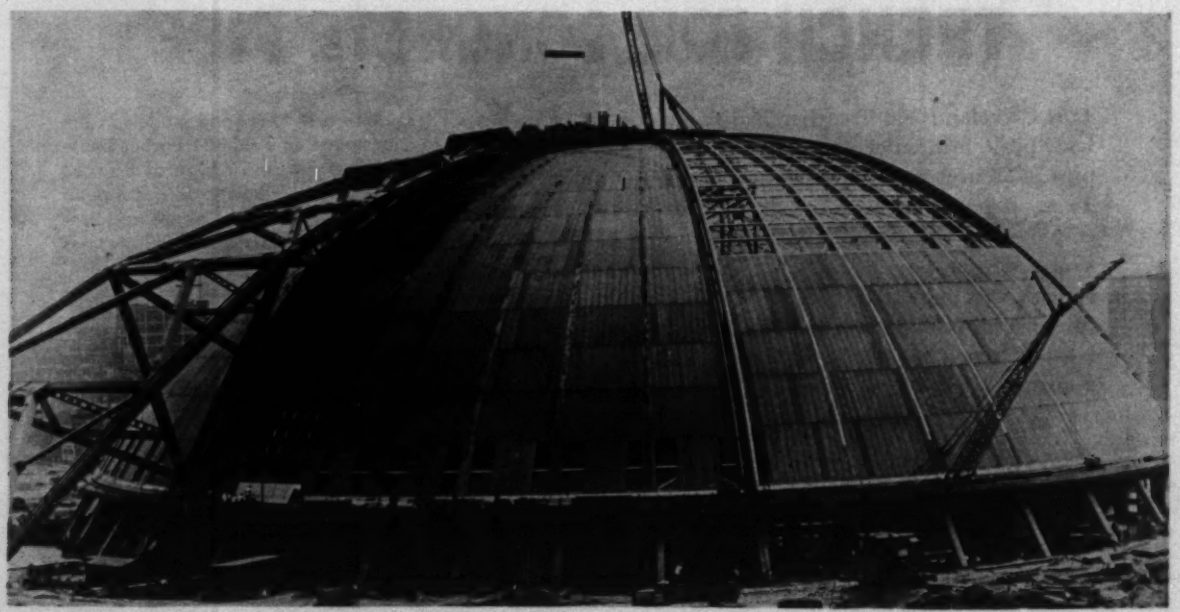
Putting the Lid on Pittsburgh's

Construction crews are putting the finishing touches on 3,300 tons of steel, machinery and sheathing that will form the retractable dome roof of Pittsburgh's Public Auditorium.

Superstructure construction hasn't been simple—most of it involved complex chord and radial layouts. Construction sequence plans read like a railroad rush hour timetable.

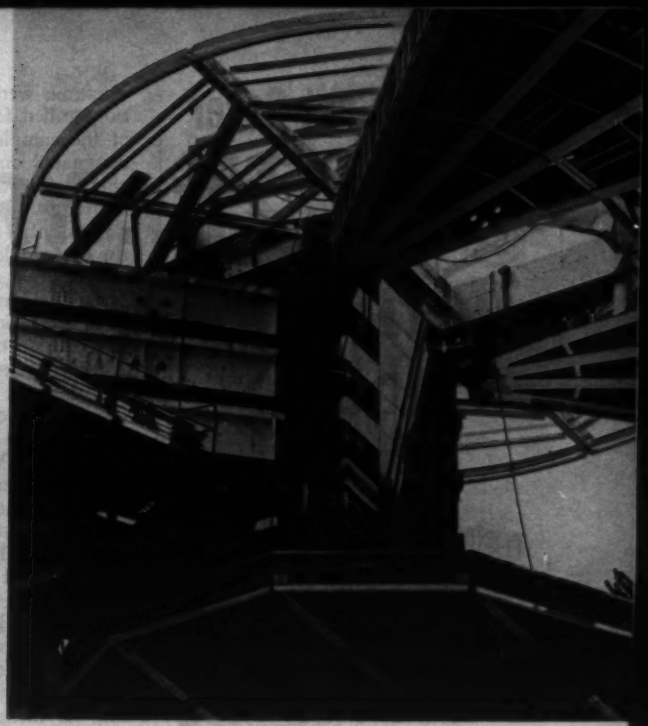
Originally, all eight leaves were to be erected before crews cast concrete for the top sections of permanent seats. That was because a pair of temporary erection scoffolds, designed to speed work on the underside of the leaves, wouldn't clear the highest concrete framing.

But during the steel strike last year the Auditorium Authority had to build the stands to keep important mechanical work on schedule. That changed the steel erection sequence. American Bridge Division of U. S. Steel, the steel contractor, worked out a new schedule with H. Rey Helveston, resident engineer and superintendent for the Authority. Instead of erecting steel for opposite pairs of leaves and then finishing them on the far side of the dome



While crews start skin at bottom left, others finish metal deck at top center.

Sheetmetal crews start the stainless steel skin.



Everything swings from the top pivot.

Auditorium

circle, the builders had to work out a shuffling system to keep all trades working on the roof, but in much less space.

The concrete stands—blocking the rolling scaffolds—eliminated a quarter of the dome area for finishing work. The fixed leaves and cantilever arm cut out another quarter. This left four positions for finishing six roof segments. Until the last steel framing went up last summer, work space was tight. Workmen winched the sections back and forth for finishing work after they were framed.

All framing is now complete and the central erection tower has been removed. As soon as the last of the steel skin is on the roof late this fall, the dome will be closed for the winter and finishing work will go on inside.

Before leaf construction could go ahead, the cantilever arm support of the dome had to be checked, aligned and test loaded.

The main frame member is a box girder 8 ft wide and up to 17 ft 6 in. deep (ENR Jan. 30, 1958, p. 30). It consists of seven sections plus an end assembly containing the leaf pivot pins. Erection lifts varied from 20 tons for a top or bottom half section to a maximum of 76 tons for the first, embedded base section. In the upper sections, the arm is a double box section with the fabricated top half erected as a massive inverted channel on the bottom half.

As erection progressed, alignment

Roof crew removes its scaffold rack above a finished leaf.

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variations were expected. But specifications called for the end working point of the completed arm to fall within a designated one inch cube. And allowable eccentricity of the pivot pins was limited to $\frac{1}{8}$ in. from vertical. Precision was essential or the rotating leaves of the roof wouldn't operate freely.

With five of the seven arm sections erected, there was only $\frac{1}{16}$ in. accumulated eccentricity in the structure. With the sixth section in place, this grew to $\frac{1}{8}$ in. At the end of the final arm section it had grown to $\frac{3}{8}$ in. and with the 36-ton pivot assembly erected, eccentricity totalled $\frac{3}{8}$ in., too much for the completed roof. What's more, this took the form of a "wind" so that the end work was a full inch too high for that stage of construction.

Ambridge had two problems to solve: First, correct the wind at the end of the arm so pivot pins would come within the $\frac{1}{8}$ in. allowed limit from plumb. Second, make sure there would be enough deflection with the total dead load of installed equipment on the arm to bring it into proper position. Actual location of the arm end, corrected for final loading, was still a full inch above the zero point.

Steel crews cured the first arm ailment—eccentric wind—by simulating some fancy shop conditions in mid-air 125 ft above the arena floor. Their work schedule for the operation:

- Remove the pivot assembly.
- Place four temporary erection masts—one at each corner—of the outer box girder section.
- Take up and balance the weight of the end section on these posts, which extend 125 ft down to calibrated hydraulic jacks on the arena floor.
- Undo horizontal riveted splices between top and bottom parts of the end section.
- Lift the dead load of the top section with the central erection tower.
- Loosen top plates of the bottom box girder portion.
- Rotate the box section to remove the wind with three three-ton capacity jacks placed diagonally inside the front end of the assembly.
- While rotating the box section, adjust all four jacks under the erection masts to maintain even support.
- Ream connection holes where necessary in the straightened girder and replace the rivets.
- Release the load of the upper part, ream and rerivet the horizontal splices.
- Remove the erection masts.

When the crews finished inside the girder, the pivot section went back into place. Allowance in the design for oversize connections permitted a custom fit of the section on the aligned end of the arm.

With the eccentricity and most of the arm's high set eliminated, there still remained the question of final work point elevation in the completed structure. At this stage it carried only its own weight but was still higher than expected for its unloaded condition.

In the completed building, the leaves put no vertical load on the arm when the roof is closed—arch action transmits all loads directly through the pins and across the domed roof. And in open position, the leaves stack four deep behind and on either side of the arm, placing only a horizontal load on the pins. But there's a 35 ton load of lighting, electrical, heating and ventilating equipment suspended below the pivot section in the finished building.

Making sure the arm would take the correct set in the final structure, engineers ran a load test on it before leaf erection got underway. Working with the handiest material, crews suspended 50 tons of temporary erection bent sections from the arm end. Calculated deflection was figured at $1\frac{3}{8}$ in. With the test load in place for an hour, actual deflection totaled $1\frac{1}{4}$ in., well within design limits.

With the arm checked out, erection of the six moveable leaves began early this spring. From outside to inside, each consists of stainless steel skin, 2-in. of rigid insulation with 30-lb felt above and a vapor barrier below. Next comes metal decking directly over the main framing. Below the leaf framing there's a 3-in. acoustical baffle, a 3-in. air space and finally perforated steel ceiling panels with baked enamel finish.

Framing for each leaf went up in three stages. The bottom third extended from the ring girder of the arena to temporary erection masts set up inside the arena. Middle portions of each leaf were tied to the bottom sections and carried on a second, inner line of erection supports. Top framing ran from these masts to the pivot assembly of the roof cantilever arm.

Bottom steel was erected from a crawler crane mounted directly on the concrete ring girder of the arena. To do the job, riggers placed 60-ton capacity units with 80 ft of boom and 30 ft of jib on 120-ft-long arcs of grillage beams at either side of the fixed leaves. Transfer beams and blocking below the grillage dropped loads directly through the ring girder at column locations.

With this arrangement, the cranes picked steel directly off trucks outside the arena and swung it into place on the interior side.

Middle thirds of the leaf frames were placed by a 60-ton-capacity crawler crane operating on the arena floor. Steel for this part of the work came into the arena on trucks through the permanent access gates. The erectors placed top steel with the 60-ton-capacity tower crane at the center of the arena floor.

Workmen began placing cellular

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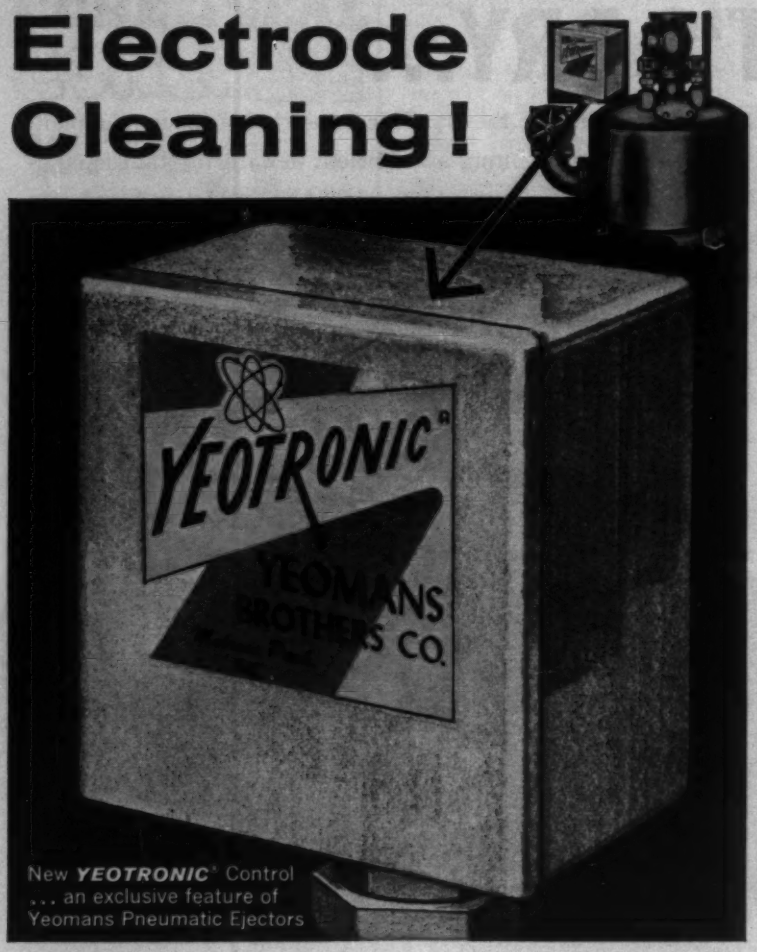

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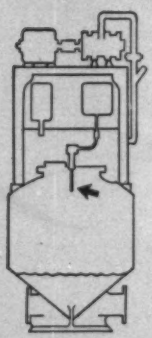

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CENTER TOWER handles upper steel. Crawlers placed lower sections.

metal deck as soon as the first pair of leaves were formed. Following the metal deck came vapor barrier, insulation and roofing felt.

The stainless steel skin covering each leaf takes the form of a batten roof. Batten bars are aluminum extrusions shaped to form a gutter within the capped seam. Any water working up under the seam will be carried off down the center gutter of the extrusion.

For the entire roof, there is more than 373,000 lb of type 302 stainless steel. Limbach Co., Pittsburgh contractors for the skin, dome closures and heating and ventilating work, had a gigantic inventory problem, since all material had to be on hand for continuous fabrication operation.

At the auditorium, workmen are erecting about 2,500 to 3,000 sq ft of stainless skin each day. Schedules call for completion of two leaves per month.

Top and bottom thirds of the roof are 20 gage material; center third is 22 gage. The top portion is assembled with arc welded, lapped and hooked seams. Dummy batten caps will carry the line of the seams to the top of the dome.

Beneath the leaves, mechanical and electrical work is going on with the trades working from the temporary scaffolds. After the stainless skin is finished on each pair of leaves, they are shunted around the circular ring girder so that electric conduits, light wells and control circuits can be installed as well as the closure mechanisms for the gaskets between leaves. Last step in the work is erection of the acoustical baffle and steel ceiling panels.

Crews are now installing stainless sheathing on the last pair of leaves. By the time winter arrives, the roof will be completed, including all closures. Then the auditorium will be closed, allowing work inside through the winter in preparation for the opening next June.

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Comparison of the Tiger, Puma and Lion

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Weight w/pusher	94	89	99
Blows/min.	3050	2300	2000
Bore ins	3	2 3/4	2 3/4
Stroke ins	1 3/4	2 5/32	2 3/4

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Quickly, easily Steeltex goes down at superbly designed Canevin High School, Pittsburgh, where 60,000 square feet of Steeltex support concrete floor slabs. Architect: Celli-Flynn, McKeesport, Pa. Contractor: Navarro Corp., Pittsburgh. Steeltex from Pittsburgh Steel Co. was specially commended for its installation features on this project.

Architect, Contractor Find . . .

Steeltex Saves 35 Cents per Square Foot

"I estimate we saved about 35 cents per square foot by using Steeltex instead of another material on the Baptist Hospital addition in Pensacola. Steeltex' quick installation also helped us meet our construction timetable easily."

Man speaking: President Raymond C. Dyson of Dyson and Company, Pensacola, Fla., general contractors.

Job: $1¾-million addition to Baptist Hospital. Here, Pittsburgh Steel Company supplied 70,000 square feet of Steeltex, the waterproofed, paper-backed wire mesh reinforcing used in the concrete floors and roof slabs.

Like Mr. Dyson, Architect Charles H. McCauley has used Steeltex for more than 20 years. He, too, knows Steeltex helps provide better construction at lower costs.

"I specified 100,000 square feet of Steeltex when the main hospital building was erected eight years ago," said Mr. McCauley. "Naturally, I specified it again when the addition was built. I think this shows I am enthusiastic about the qualities of Steeltex."

• **Cost 30-40 Percent Less**—Similar comments came from Cleveland where Architect Eugene W. Gray and Contractor William Passalacqua were responsible for constructing the new $600,000 Child Welfare Division Building.

Mr. Gray and O. E. Kronenwetter, chief engineer for Passalacqua Builders, estimated that 30,000 square feet of Steeltex in floor slabs cost 30 to 40 percent less than methods generally specified.

• **On Pittsburgh Job**—When Steeltex was combined with Pittsburgh Steel's wire mesh to support 60,000 square feet of concrete floor slabs at Canevin High School in Pittsburgh, Steeltex was specially commended for its installation features.

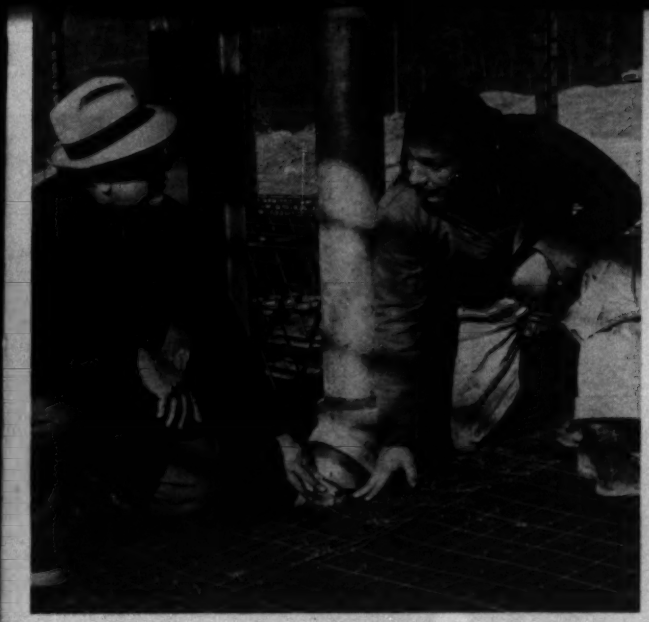
Joseph V. Cutuly, job superintendent for the general contractor, Navarro Corporation of Pittsburgh, likes Steeltex because "it takes more punishment during installation than a sheet metal, goes down faster and is much easier to handle."

Dean Regan, foreman of the crew that installed Steeltex in the $2½-million building, has used Steeltex on more than 55 jobs in ten years.

"Steeltex is very easy to install. Just unroll it, cut, tighten and clip," he said.

• **Makes Stronger Slab**—William B. Tabler of New York City, architect for the $2½-million Hilton Inn at the San Francisco Airport where 65,000 square feet of Steeltex supports the floors, pointed out additional Steeltex features. Said Mr. Tabler:

"Steeltex retains moisture and cement to a greater degree than lath. This makes a cleaner job. Also, the sag from the concrete cradled in the Steeltex gives additional lateral resistance which aids earthquake construction."



Snug fit of Steeltex around drain pipe at Canevin High School is shown by Joseph V. Cutuly, job superintendent (l.), and Foreman Dean Regan. Mr. Cutuly says, "Steeltex takes more punishment during installation than a sheet material, goes down faster and is much easier to handle."

At luxurious Hilton Inn, San Francisco Airport, 65,000 square feet of Steeltex in floor slabs aid earthquake construction. Architect: William B. Tabler, New York City. Contractor: Cahill Construction Co., San Francisco.

• **New Users Like Steeltex**—Steeltex also is endorsed by new users such as the architectural firm of Charles Bacon Rowley and Associates, Inc., and Ernst Payer, and Contractor Albert M. Higley Company, both of Cleveland. They teamed up on building the $805,000 Western Reserve Historical Society Museum in their city.

Superintendent Albert M. Higley Jr. estimated "perhaps a four percent savings was realized by using 11,500 square feet of Steeltex instead of placing conventional roof structures."

• **Will Use Again**—Another satisfied new user is Irving D. Robinson, architect for the new $325,000 Luria Brothers Building in Cleveland.

Mr. Robinson said: "This is the first time I specified Steeltex and I am sure I will use it many times again. Steeltex permitted work to continue on the floors without planking or scaffolding, although the concrete slab was not poured for many weeks after the 12,000 square feet of Steeltex were installed." Contractor for the job was J. L. Hunting Company, Cleveland.

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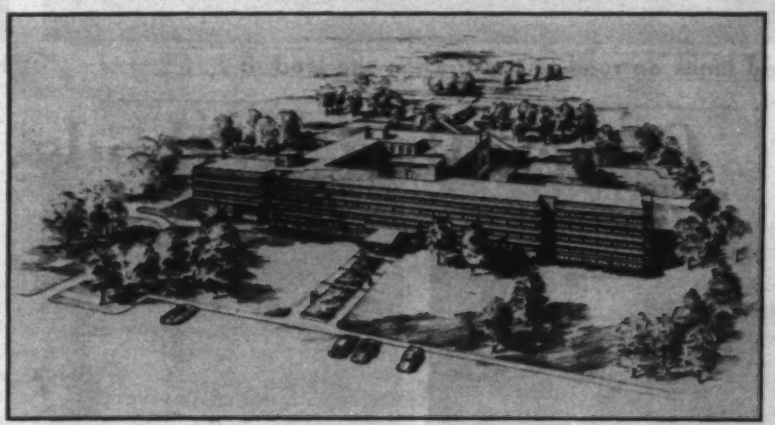

$24,500 was saved on cost of material and labor by using 70,000 square feet of Steeltex in the Baptist Hospital addition in Pensacola. Architect: Charles H. McCauley, Birmingham. Contractor: Dyson and Company, Pensacola.

▶ **See Sweets Catalog Section 2-A**

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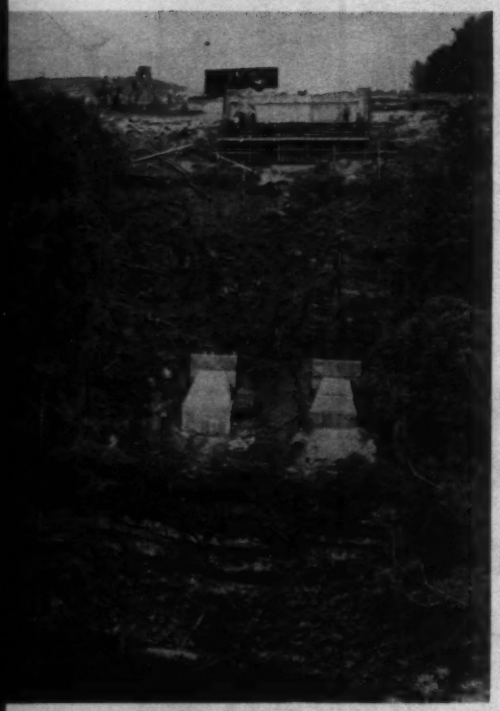


Twin arches will span gorge.

Contemporary methods of bridge construction normally take full advantage of automation in batching, mixing and placing concrete. But one contractor has resorted to methods reminiscent of the 1920s on twin steel arch bridges over a deep gorge in the Wisconsin Dells resort area of Wisconsin.

On one side of the crossing, workmen mixed concrete for abutments and footings in a ½-cu-yd stationary mixer, with sand and gravel wheel-barrowed from stockpiles and bagged cement hand-dumped into the skip.

The contractor had to use this cumbersome method to keep construction on schedule during concrete placement in the spring, when the frost was going out of the ground.

During this period, all access roads to the south bank of the gorge were posted for a gross vehicle load limit of six tons. This precluded delivering the concrete in transit-mix trucks. Instead, the contractor hauled sand, gravel and cement to the site in small trucks.

The wheelbarrow-and-mixer method wasn't as slow as might be expected. A 10-man crew placed up to 10 cu yd of concrete in the forms per hour for a sustained run of nine hours.

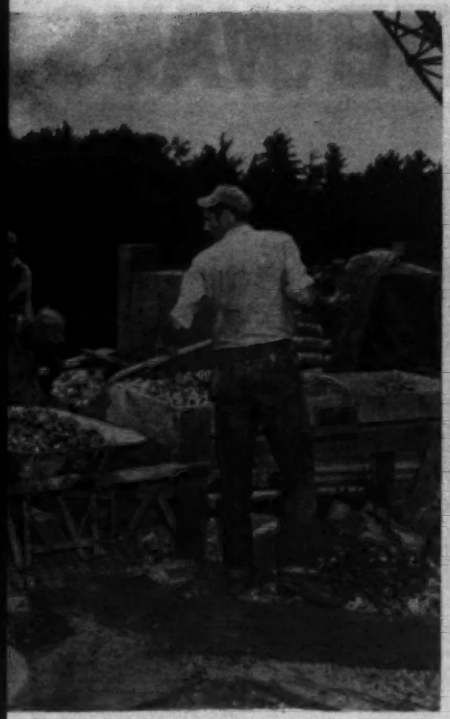
Although the concreting operations resembled those of a bygone era, even a casual observer would quickly spot certain procedures not commonly used 30 or 40 years ago. Instead of the old 1-2-4 mix (by volume) with the only quality control being maximum permissible slump, the concrete mix was as carefully designed and controlled as it is on any other present-day job.

Instead of sand and gravel being measured by loading wheelbarrows to a hand-drawn chalk line around the inside of each wheelbarrow, all aggregates were carefully weighed.

Concrete was transported from mixer to forms by a crawler crane and concrete bucket, instead of the old laborious method of wheelbarrowing it on timber plank or up steep ramps.

Concrete in the forms was vibrated with ease by a high-speed internal vibrator instead of being puddled with long-handled paddles or by a small boy inside the forms.

Mixing water was pumped up from a nearby lake a total height of about 125 ft. It was lifted in two stages to the measuring tank on top of the mixer. Air-entraining cement was used, but a small amount of liquid agent was added to each batch to meet specifications for the volume of entrained air.



concrete for abutments.

# of 1920s

Five workmen wheelbarrowed the concrete aggregates from stockpiles to the concrete mixer. Three handled the two sizes of gravel and two handled the sand. Each load was weighed on a platform scale before being dumped into the skip of the mixer.

Excess material was removed by hand shoveling it into a small three-section timber box mounted on 2x6 posts driven into the ground beside the scales. Any deficiency in a load of gravel or sand was corrected by shoveling the proper amount of material from the temporary storage box into the wheelbarrow while it was still on the scales.

A typical half-yard mix, dry weight, included: 641 lb of sand, 583 lb of −2 in. gravel, 389 lb of −¾ in. gravel, and 282 lb of portland cement. Total water content averaged 5.5 gal per sack of cement.

The volume of entrained air was 4.5 to 5%, and the slump was 3 to 3.5 in., using a standard 12-in. high cone.

L. G. Arnold, Inc., Eau Claire, Wis., is the contractor and Fred Duelman is superintendent. For the Wisconsin State Highway Department, Eugene E. Sheets is project engineer. S. E. Hicks is engineer of construction and E. L. Roettiger is state highway engineer.

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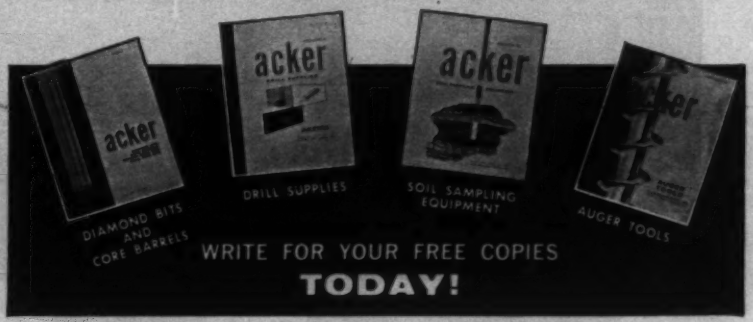

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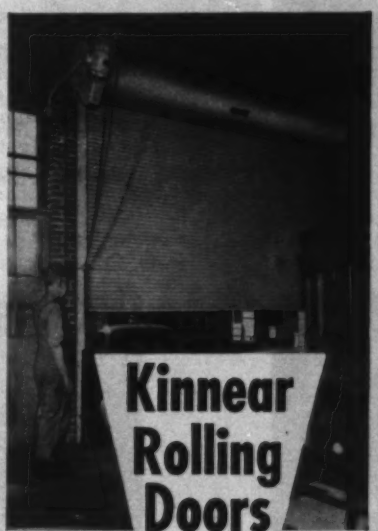

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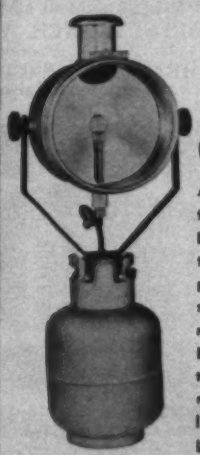

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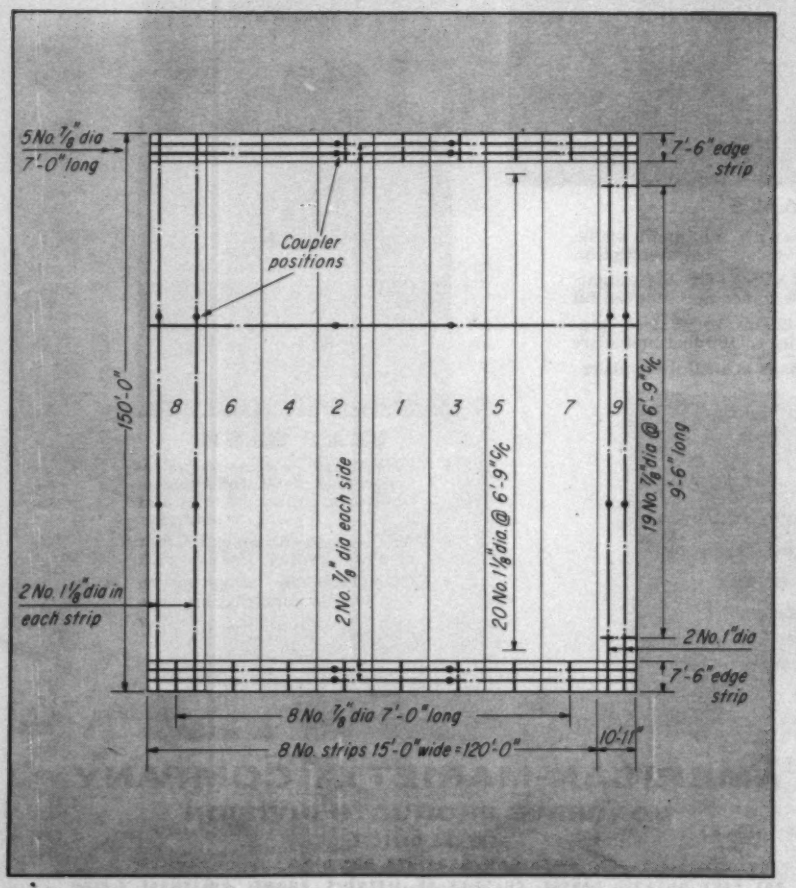
For an apron at London's Gatwick Airport . . .

Prestressed Slab Has Tubular



SLAB was cast in 15-ft-wide strips between previously placed edge strips.

Prestressed concrete pavement—still unusual everywhere—has been built in an unusual way at London's Gatwick Airport. Cast-in-place concrete edge strips and unique tubular sleeve anchorages held the steel bars used in stressing the slab.

The 6½-in.-thick, 132x150-ft apron was post-tensioned both ways with 1⅛-in.-dia high strength alloy steel bars.

Donovan H. Lee, London consulting engineer, designed the apron. Although prestressing is slightly higher in initial cost than a comparable dowelled mass concrete slab, the designers chose prestressing because it eliminates maintenance of contraction joints and is expected to prove stronger and more durable over the long run.

The apron subgrade is clay. Gravel was used for any necessary filling. Workmen placed a 4-in. layer of lean rolled concrete covered with a 1-in. layer of sand topped by building paper.

The Macalloy bars used on the project were developed by Donovan Lee for McCalls of Sheffield (the U.S. equivalent is Stressteel, produced by the Stressteel Corp. at Wilkes-Barre, Pa. under license by McCalls). Before they were placed, the bars were coated with an impregnated fabric tape, to protect against corrosion and to eliminate the need for grouting after stressing.

All the bars were laid horizontally. They were supported by blocks placed on the building paper. The bottom layer contains longitudinal bars spaced 7-ft 6 in. c-c, which are anchored by 6x5-in. standard end plates. In the top

HIGH STRENGTH BARS are wrapped with impregnated fabric to prevent bond.

Anchorages

layer are transverse bars spaced 6 ft 9 in. c-c and the tubular sleeve anchorage (see drawing). In both cases the eccentricity was ¾ in. and constant.

Engineers tested the sleeve anchorages by loading to failure several test specimens containing different sizes of spiral reinforcing. They also performed tests on the anchorages embedded in a 6x4-ft concrete slab, subjecting them to 1½ times the planned jacking load. No signs of cracking appeared in the slab.

To minimize the number of construction joints, engineers specified building the slab in strips extending the full length of the apron. To prevent shrinkage cracking, each strip was prestressed soon after the concrete was placed. To provide anchorages for prestressing, the designers called for the construction of edge strips 7 ft 6 in. wide cast in 15-ft bays about one week before the pavement was cast. Thus, the contractor built the apron in nine 15x135-ft strips. Each strip was cast in one operation between end slabs that contained the anchorages for the longitudinal bars.

Construction began with an interior strip (No. 1) and proceeded toward the edges, following an alternate casting sequence (see plan). Each strip was covered with wet sacking as soon as the concrete was sufficiently hard. The next day, two thirds of the specified longitudinal prestress was applied by stressing both bars (30 tons each) from both ends. After construction of the first strip, work went on in two strips

EXTRA BARS along slab edges have tubular sleeve anchorages.

HARDENED CONCRETE is post-tensioned by use of hydraulic jack assembly.

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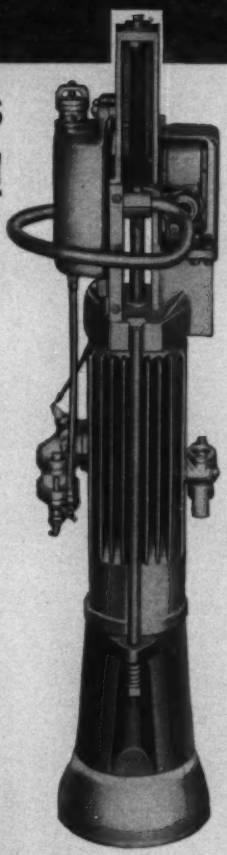

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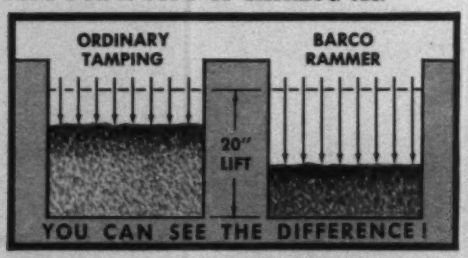

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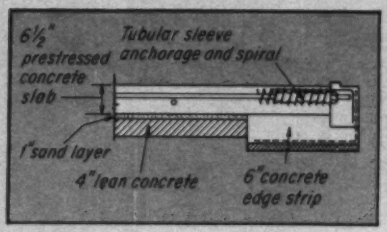


ANCHORAGE details at slab edge.

at the same time, one in which the sand and paper were laid and the bars fixed, and the other being cast.

Construction of the nine strips was completed in eleven days, including two one-day gaps (the outer strips contained 58 sleeve anchorages, required additional time for installation). Damp curing was maintained for three days after casting a strip.

The combination of early stressing and initial wet curing prevented formation of shrinkage cracks.

When the concrete in the outer strips had reached a strength of 4,000 psi, workers applied two thirds of the prestress load to each transverse bar (30 tons). Later, final load of 45 tons was applied to each longitudinal and each transverse bar.

Short lengths of ⅞-in.-dia bar were introduced along the edges of the apron between the 1⅛-in.-dia bars to reduce the area of unstressed concrete in the periphery of the slab. Designers decided these bars were not necessary at the west edge, since there the apron bears over a width of 3 ft on a 9-in. slab that carries a hangar door track.

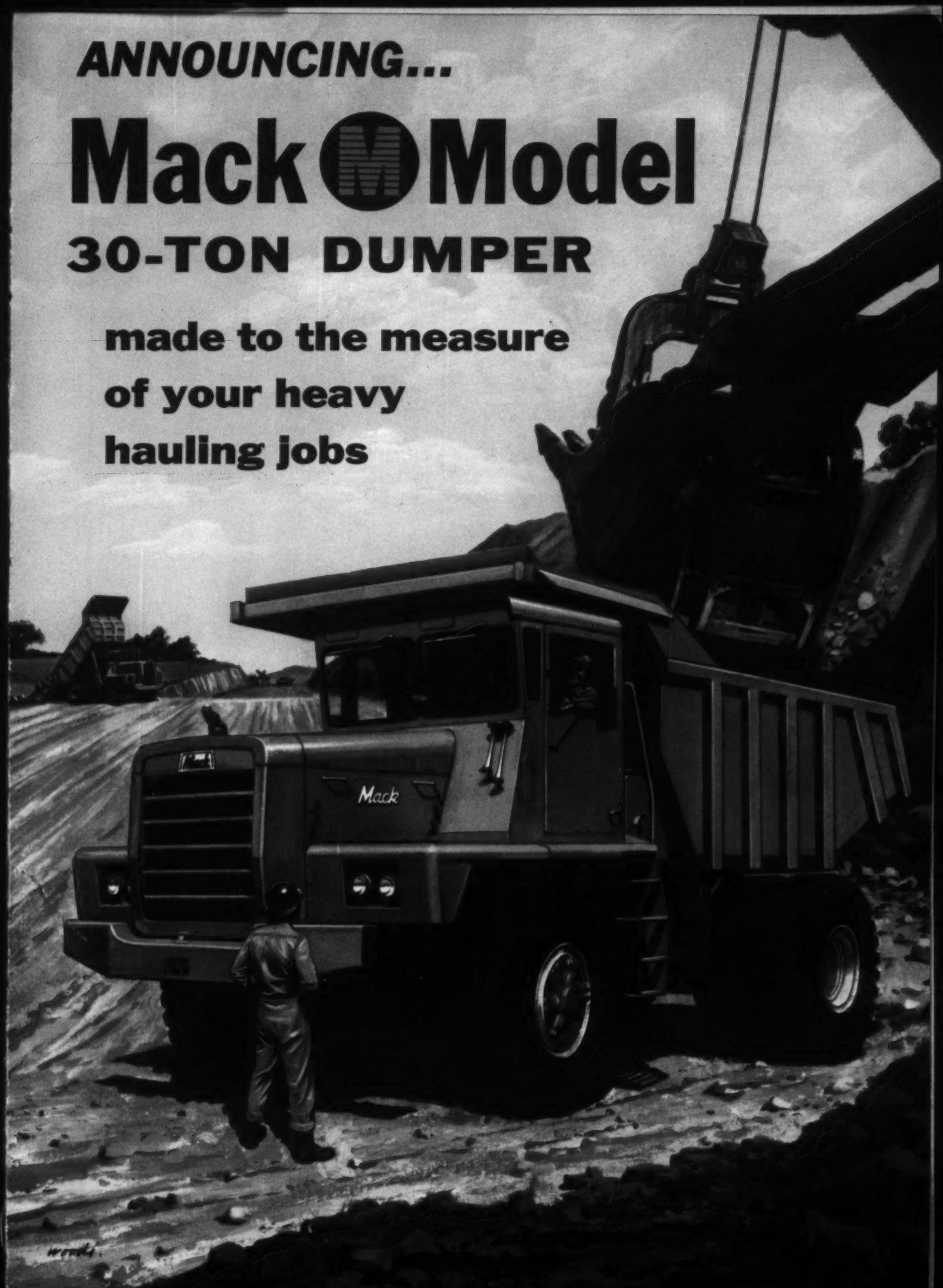
Plans call for extending the apron 110 ft to the east and 350 ft to the south, using the same method of construction.

Engineers specified minimum compressive strength of the concrete at 28 days as 6,000 psi, using regular portland cement. Concrete was compacted around the anchorage with tube vibrators; a vibrating screed was used elsewhere. Average strength of the concrete at 28 days was 8,070 psi.

Initial resistance offered by the wrapping used on the 150-ft Macalloy bars was two tons; this dropped to an undetectable small value as soon as some bar movement had taken place.

Designers anticipated that some differential movement might take place between the cast strips, with a resulting tendency to shear the transverse bars. Engineers measured this differential movement, which was found to be less than 0.02 in. at the edges. After initial tensioning was complete, the apron contracted about ¼ in. all around.

The slab was built for Overseas Aviation (CI), Ltd. Architects P. & D. T. Myers of London. Contractors for the apron were J. Jarvis & Sons, Ltd. of London and Manchester.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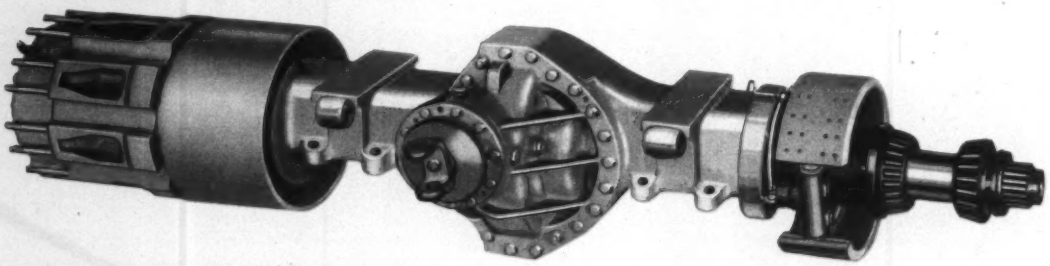
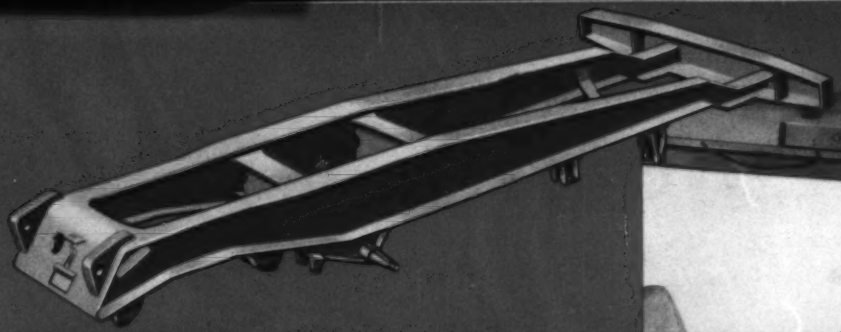
Add the many significant features exclusive to the Mack M Model . . . features that make the M-30X Model even more rugged, powerful, dependable and safe . . . and you have a vehicle sure to be first choice among those who must haul huge tonnages profitably.



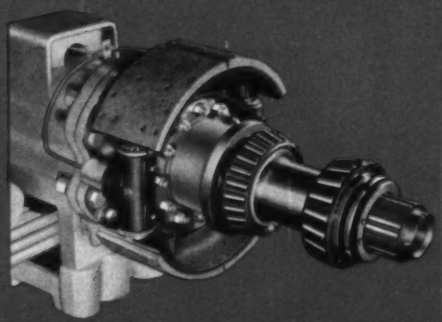
Heaviest-duty Mack rear axle, combining hypoid carrier with Planidrive, keeps M-30X hustling where others bog down. With Mack's patented Planidrive planetary gear drive in the rear axle hubs giving the dig-out torque needed for heavy off-highway hauling, the Mack Model M-30X boasts one of the strongest, longest-lived rear axles of any 4-wheel dumper in the field. Drive is through exclusive single-reduction hypoid Mack carrier, with planetary gears. Suspension is by extra long, extra broad semi-elliptic progressive-rate leaf springs with cam face slipper ends and radius rods.

New tubular front axle withstands heavier loadings. Steel tubing, seven inches in diameter, with walls ¾" thick is welded to cast ends to provide a reversed-elliott front axle that withstands the most punishing loads of quarrying, construction or mining.



Five-crossmember frame shrugs off jarring drop loads of big shovels. Typical of Mack off-highway truck construction practices, the frame of the M-30X Model is extra solid, extra strong. Five crossmembers, including integral front and rear bumpers, tie alloy steel fabricated I-beam main rails together to provide wrack-free support. Crossmembers are welded to web of main rails to prevent stress concentration in flanges. All corners are gusseted, with gussets welded to webs.

New massive, functional cab for extra strength, driver comfort. Completely new in appearance, the Mack M-30X cab is not only rugged, but completely functional. Efficient modern lines offer a reverse-slope windshield which lessens glare and reflections while reducing dirt and dust accumulation. Forward position permits heavier loading of new, larger-capacity setback front axle. Offset cab design provides maximum vision forward and behind for quicker spotting, quicker dumping, safer truck operation. Piano-hinged cab doors give extra strength, double cab venting gives extra comfort. Interior layout features easy accessibility and instrument visibility . . . lets driver concentrate on the job.



Unsurpassed stopping power—another M-30X feature. Shouldering a 30-ton payload demands safe, sure braking power. But the M Model's braking system more than meets the challenge. Front brakes are air, supplied by a 12 cu. ft./m. compressor, while rear brakes are air-hydraulic. Separate master cylinders at rear brakes provide safety factor in case of failure at either wheel. All brakes are internally expanding with simplified adjustment.

Mack Model M-30X

Built to extra-heavy-duty specifications

PAYLOADS: Rear dumper, 30 tons

WHEELBASE: 165"

PLATFORM LENGTH: 144"

OVER-ALL LENGTH: Front bumper to end of body, 323"

DIESEL ENGINES: 320 hp to 380 hp, six-cylinder diesel engines

COOLING SYSTEM: 1500 sq. in. frontal radiator, continuous finned, flat-tube

ELECTRICAL SYSTEM: 12-volt, 55-amp.

STARTING: Electrical, 24-volt

TRANSMISSIONS: Mack, selective, constant-mesh, 8 speeds forward, 2 reverse; optional Torqmatic transmission and Torqmatic brake; integral torque converter and planetary transmission selective shift

CLUTCH: Two-plate, air-assist with manual actuation

REAR AXLE: Single-reduction hypoid carrier, with final reduction Mack Planidrive planetary gear reduction within wheel hubs

FRONT AXLE: Mack, heavy-duty, tubular, welded cast ends

BRAKES: Front, air; rear, air-hydraulic; rear wheels with separate air and hydraulic cylinders to prevent complete loss of braking in event of failure at one wheel; 12 cu. ft. compressor

FRAME: Alloy steel, wide-flange I-beam, 137 section-modulus

STANDARD BODY: Heavy-duty 100,000 psi alloy steel

CAPACITY: Struck, 20 cu. yd.; heaped SAE rating, 25.5 cu. yd.

SPRINGS: Front, semi-elliptic, progressive rate; rear, semi-elliptic, progressive rate with cam face slipper ends and radius rods

WHEELS: Cast-spoked

TIRES: 18.00 x 25, 24-ply tubeless on 13.00 rims

STEERING: Hydraulic power-steering, 30' turning radius

DUMP HOIST: Twin, double-acting, outboard mounted, two-section telescopic cylinder assembly, providing 60° dumping angle

POWER TAKEOFF: Mack, 50 hp

OPTIONS: Air-starting; rock ejectors

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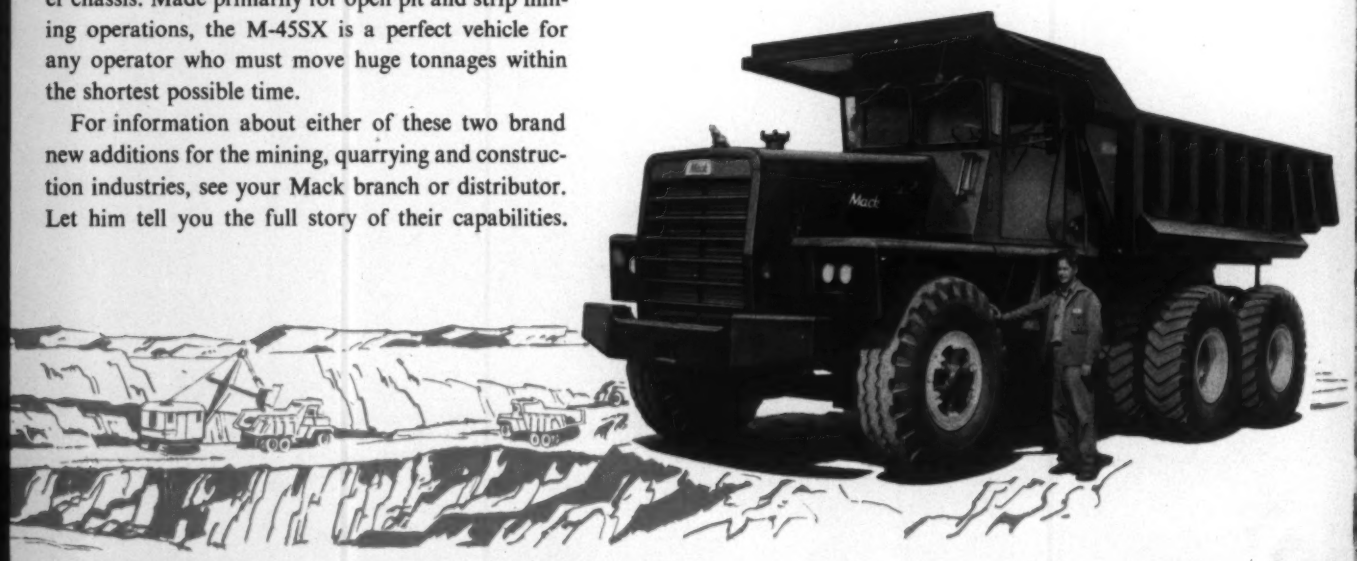
Mack Trucks, Inc., Plainfield, New Jersey. Mack Trucks of Canada, Ltd., Toronto, Ontario

Mack M-45SX Model—six wheel, 45-ton mining-duty dumper. Unmatched capacity in the heavy-duty hauling field is offered in this companion to the M-30X—the remarkable Mack Model M-45SX six-wheel dumper chassis. Made primarily for open pit and strip mining operations, the M-45SX is a perfect vehicle for any operator who must move huge tonnages within the shortest possible time.

For information about either of these two brand new additions for the mining, quarrying and construction industries, see your Mack branch or distributor. Let him tell you the full story of their capabilities.



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7940

Heavy Concrete Shields Nuclear Cells

High-density concrete, pneumatically applied, forms the shielding walls of "hot" cells in the Atomic Energy Commission's new Hanford Radiochemistry Laboratory at Richland, Wash.

The heavy concrete will shield laboratory personnel from the intense radiation issuing from "hot" experimental material.

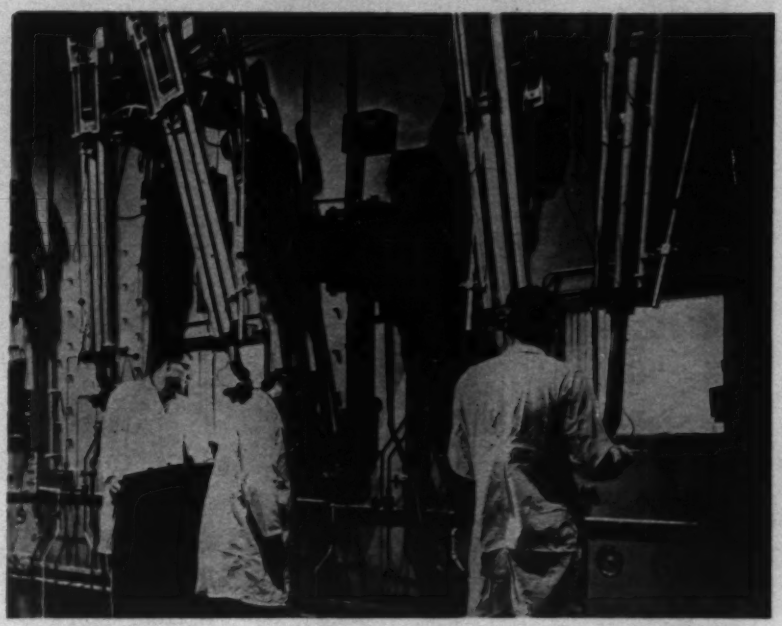
Made with iron-ore aggregate instead of ordinary sand and gravel, the concrete weighs 235 lb per cu ft in place and attains a 28-day strength of 3,200 psi. A 4-ft thickness of iron-ore concrete affords about the same radiation protection as a 6-ft thickness of normal concrete.

Designer-builder B. D. Bohna Co., Inc., of Richland, Wash., decided to spray the mix under compressed air pressure instead of placing it between forms. Pneumatic application enabled the engineers to maintain density control of the mix and to check visually for the formation of voids as the walls took shape. It also eliminated some formwork.

A total of 175 cu yd of high-density concrete was required to construct three cells. All cells are 7 ft wide and 15 ft high. Two are 6 ft long; one is 15 ft long.

At the rear wall huge cast iron doors, 17½ in. thick, provide the same radiation protection as the 3-ft thickness of iron-ore concrete. Front and side walls are 4-ft-thick concrete.

The building housing the experimental cells is a steel-framed structure, two stories, enclosed with windowless metal siding. Main floor ceiling height is 27 ft. Total cost: just under $1 million.



Iron-ore aggregate in concrete gives scientists more protection.

The new laboratory will enable the General Electric Co., which operates Hanford as prime contractor for the AEC, to experiment with new methods of treating atomic wastes, recovering radioisotopes for use as tracers, and reprocessing spent nuclear fuels. Air conditioning is controlled as an integral part of the radiation protection system: air flow is always from "cold" toward "hot" areas.

Electronically controlled master-slave manipulators (above man in right-hand side of photo) will handle 50 lb of material in vertical lifts, 8-10 lb with arm and wrist movements.

Reservoir Gets a Plastic Lining

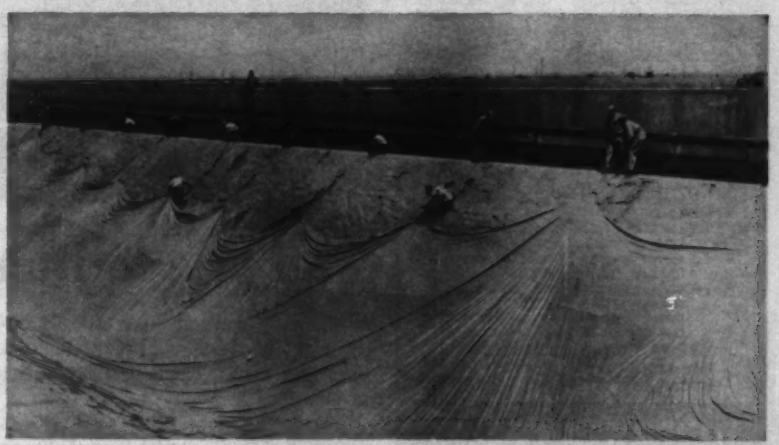
Vinyl plastic material used to line a reservoir on the edge of the Mojave desert is reported to have saved $5,000 for southern California taxpayers.

The 21,680-sq-ft sheet was placed over bare, pre-tamped earth in a two million-gallon reservoir.

The sheet was folded road-map fashion and placed lengthwise down the center of the reservoir. Workmen standing along the edges drew the liner into position, up 45-deg slopes to the rim of the reservoir. Water-tight seals were then made.

The reservoir is 220 ft long, 77 ft wide. A 7 ft wall surrounds it, allowing a maximum depth of 26 ft.

The vinyl plastic material is 0.020 in. thick and weighs 20 oz per sq ft.



Workmen manhandle plastic sheeting up 45-deg reservoir slope.

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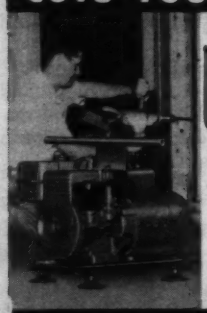

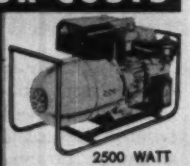

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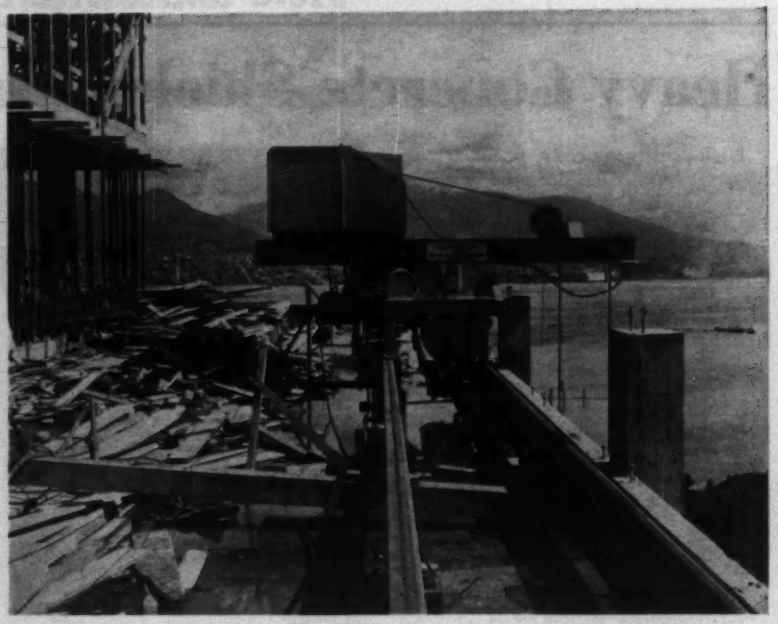


Shuttle Crane Speeds Building

This remote control crane lifts loads of up to two tons, taking them to any point along a track around a building perimeter at speeds up to 40 ft per min.

The machine resulted from a search for an economical means of moving precast concrete panels and column sections to their proper locations on the face of a 19-story building under construction in Vancouver, B. C.

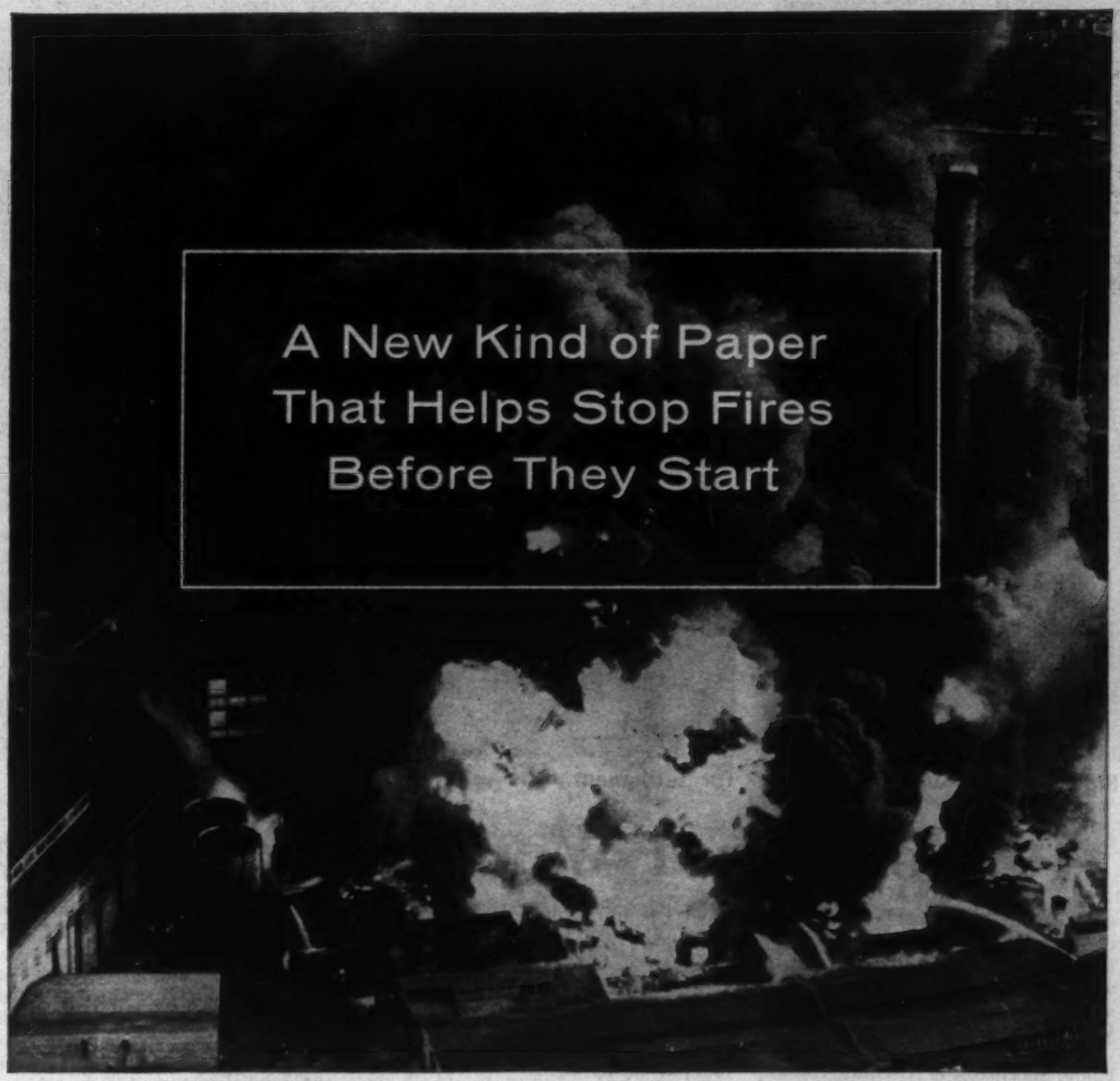
The electric powered crane will move its load in any one of three planes. In addition to raising or lowering, the crane can move a load toward or away from the face of a building on retractable boom arms. The crane moves laterally along the building face on temporary rails mounted on the top floor. No signal man is necessary, since the operator works at a control board removed from the crane itself.

No Place to Run a Red Light

Manually controlled, electrically operated traffic signals replace flagmen on this S. J. Groves & Sons Co. project in Illinois.

The contractor's haul road crosses busy U.S. 66, an arterial route between Chicago and St. Louis, and points west. Electric traffic lights controlled the heavy traffic much more effectively than flagmen could have.

Groves men are moving nearly 1 million cu yd of earth as part of a $2-million contract for a 2.6-mile stretch of nearby Interstate 70.



The bill is higher than ever today when fire interrupts production. That is why architects, engineers and building management think in terms of "total fireproofness". A requirement of this concept is the scrutiny of every element of construction as to its flammability.

An additional contribution to "total fireproofness" has been made with the development of Pyro-Kure® vapor barriers. These U/L rated products (used in construction to eliminate condensation damage) employ paper, foil or plastic film laminations. The special adhesive used emits a gas at combustion temperature which snuffs out the flame making the product self extinguishing.

Pyro-Kure vapor barriers are unique in being *permanently* non-combustible. They have a perm rating of less than 0.1 and are being used as insulation facing, pipe jacketing and duct lining. Leading insulation manufacturers are combining them with their products. Write Dept. AS2 for technical literature and samples on this vapor barrier line.

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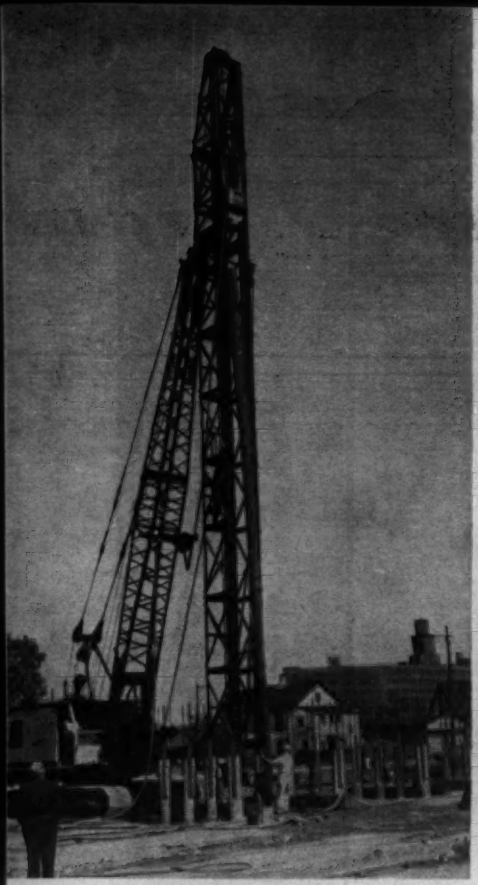

Big rig drives wood piles . . . for settlement tests using hydraulic jacks . . .

40 Tons on a Wood Pile? Chicago

"It is our belief that a design load of 40 tons per pile can be applied safely throughout the country to Class B wood piles where soil conditions are similar to those that are found in the Chicago vicinity."

That is the recommendation of McClurg, Shoemaker & McClurg, consulting engineers, after three weeks of pile-testing Chicago's South Dearborn Street.

The tests were sponsored by the American Wood Preservers Institute "to determine safe working loads and ultimate load-carrying capacities of treated wood piles in the Chicago vicinity."

Six creosoted piles were subjected to a preliminary loading of 100 tons each. Then five were tested to failure. Two were Class B (12-in. butt and 7-in. tip, min.)—ASTM D25-58—oak and southern pine. The other four creosoted piles were Class A (14 in. butt and 8-in. tip, min.), of oak, southern pine and Douglas fir.

A water jet removed rubble from about 5 ft of overburden. Then a single-acting hammer drove the piles through 13 ft of medium to loose sand and silt, 20 ft of stiff to tough clay, and about 3 ft into hardpan. The hammer developed 15,000 ft-lb of energy driving the piles.

Hydraulic jacks applied loads against a 36-in. wide-flange beam weighing 300 lb per lin ft. It was held down by 24-in. cross beams—one at each of five four-pile anchor bents.

The 24-in. cross-beams were connected to the anchor piles by bolts welded to bars, which, in turn, were fastened to the piles with connector assemblies.

A calibrated torque wrench kept loads applied to each bar-bolt and to each anchor pile about equal. The 350-ton and two 100-ton hydraulic jacks applying the test loads were also calibrated. Usually two test piles and sometimes three piles were under load at the same time.

Three different methods were used to measure the downward movement of each test pile. They included two Ames dials reading to 0.001 in., a surveyor's level, and a piano wire stretched adjacent to the pile.

Of the five piles tested to failure, the two Class B piles failed under loads of 122 and 151 tons, respectively. Two of the other piles failed under loads of 122 and 142 tons, while the third one withstood a phenomenal load of 235 tons before failing.

According to Verne O. McClurg, in charge of the project, "These so-called failure loads indicate the point at which it was impossible to maintain jack pressure by continuous pumping. It was concluded that the piles were being pushed down into the hardpan and the pile had not crushed at any point, although there undoubtedly was plastic strain as well as elastic strain in the wood."

One primary conclusion found in the engineers' report to the AWPI is that either Class B or Class A pressure-treated wood piles, if tested individually, will have an ultimate load-carrying capacity of much more than 100 tons. This is based on the provisions that they are driven to about ¼-in. penetration per blow of a 15,000 ft-lb energy hammer, and where the soil conditions are similar to those that exist at the test site.

The report also concludes that the ultimate load for large groups of piles would be about 80% of the ultimate test load on an individual pile.

McClurg's recommendation also ap-

to establish a safe design load for timber piles.

Engineers Say 'Yes'

plies to other Chicago conditions where hardpan hasn't reached, but where the final required penetration per blow is reached in very tough and hard blue clays or dense silt.

The conclusions are predicted on the following assumptions:

1. After making allowances for some relaxation of the upper soil strata, the bottom 4 ft of a pile provides 75% of the pile bearing capacity and the remaining 25% of the capacity is achieved by skin friction of the pile surface area above the bottom 4 ft.

2. The bottom of each pile can carry indefinitely a load of 80 tons by virtue of the wedge action induced by pile taper, the passive compression of hardpan against the pile, and the direct bearing of the pile point itself.

3. Because the cross sectional area of a Class B pile at a point 4 ft above its point should be not less than 50 sq in., a load of 30 tons at that point should not create over-stress of the wood itself.

4. The pile above its 4-ft tip section is safely capable of sustaining more than 10 tons by its skin friction.

The report points out, though, that while its recommendations may be conservative for areas having soil conditions similar to those in which the tests were made, they cannot be assumed to apply to all soil conditions. Particular exception is made to conditions that might submit pile clusters to drag loadings of surrounding fill.

For Chicago and areas with similar soil conditions, however, McClurg recommends that a working design load of 40 tons per pile be used as a safe and reasonable figure even for large clusters of piles spaced as close as 30 in. c-c.

In contrast to the recommendations resulting from the $20,000 pile-testing program, Chicago's Building Code specifies that allowable loads on timber piles not exceeding 25 tons per pile shall be determined by one of four formulas, depending on the type of driving equipment. For design loads over 25 tons, controlled load tests are required to determine the allowable pile load.

The test piles and anchor piles were driven by Harry A. Thompson, Inc., Chicago. The piles were furnished by the Wood Preserving Division, Koppers Co., Inc. Soil Testing Services, Inc., Chicago, were the testing engineers.

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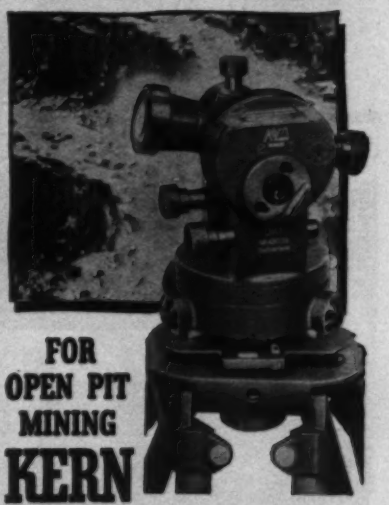

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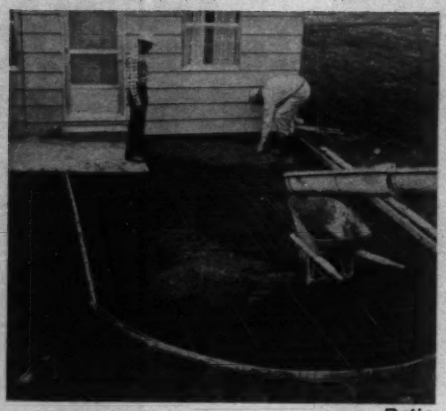

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Vacuum Tail Gate Control Eases Material Spreading

Dump truck drivers can have precise tail gate opening control without leaving their cabs, according to manufacturers of the Vacuum Tail Gate Control.

The unit is designed for easy installation on dump trucks with hydraulic brake systems. It is particularly helpful in spreading granular materials when measured quantities or accurate flow rates are important, says the manufacturer. That's because it permits compensation for load weight, truck body angle and speed.

The Vacuum Tail Gate Control kit includes a four-way metering hand valve that can be attached to the steering post, a double acting push-pull vacuum power cylinder, and all necessary couplings, fittings and clamps. Multiple controls are available for compartmented trucks. VELVAC, INC. 3534 PIERCE STREET, MILWAUKEE 3, WIS.

Filter Medium Is Washed While in Operation

EimcoBelt vacuum filters make it possible to wash the filter medium during continuous operation. Even glutinous materials and slurries containing low-density solids can be filtered without clogging of the medium, the maker says.

The equipment uses a continuous belt drum filter principle that removes a synthetic fabric medium, as well as woven metallic media, from the drum for cake discharge and washing and returns it to the drum every filter cycle.

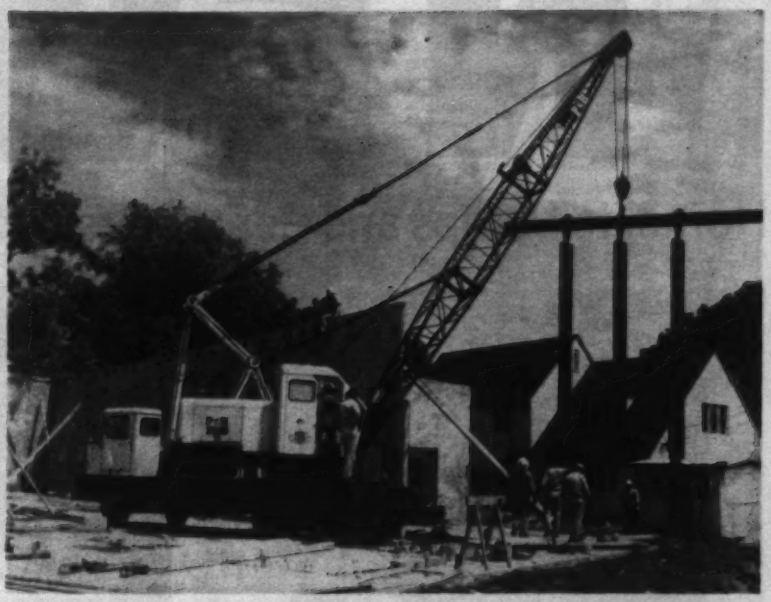
Current uses of the vacuum filter include dewatering of sewage sludge, processing of chemicals and food and mineral beneficiation. THE EIMCO CORP., SALT LAKE CITY 4, UTAH.

Polyethylene Compound For High-Strength Pipe

High-density polyethylene compound DGDA-2033 is intended for the production of high-strength extruded pipe. The material has toughness and good high-temperature performance according to the maker.

In long-term pipe-burst tests, the compound showed higher strength characteristics at standard and elevated temperatures than other high-density polyethylene compounds.

The material meets the requirements for Type III pipe compound under proposed revision of U. S. Department of Commerce Commercial Standard 197-59. UNION CARBIDE PLASTICS CO., DIVISION OF UNION CARBIDE CORP., 30 EAST 42ND ST., NEW YORK 17, N. Y.



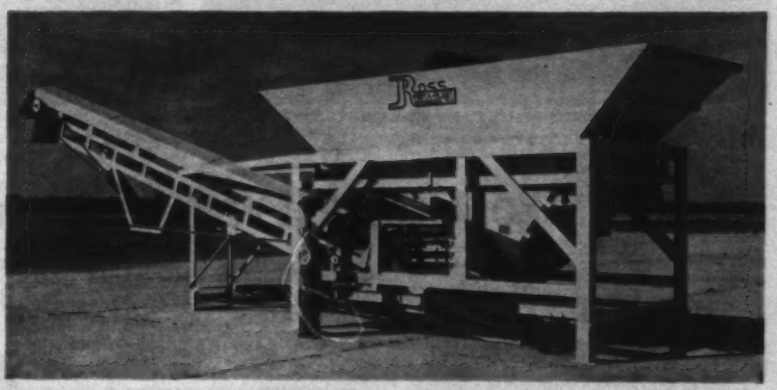
20-Ton Crane Reaches 140 ft

The 255B-TC, 20-ton truck crane safely handles booms and jib extensions up to 140 ft in length, the manufacturer says.

When equipped with a maximum 110-ft boom and 30-ft jib extension, the machine can deliver a 5,500-lb load 12 stories above ground, or position 4,300-lb loads 60 ft away.

The manufacturer credits "a new concept of balancing" in the choice and location of components for the crane's ability to handle unusually long booms.

The main gear housing is built as an integral part of the machine. All major gears in the crane portion of the unit are sealed inside, and require change of oil only once a year. HARNISCHFEGER CORP., 4444 W. NATIONAL AVE., MILWAUKEE 16, WIS.



Quick Assembly for Batching Plant

A portable concrete batching plant can be assembled in less than an hour and, in the next hour, can produce aggregate mix for 60 yd of concrete.

Only a small dirt ramp is required to make the overhead storage bin accessible to a front-end loader. The top is only 11 ft above ground level.

A "decumulative" weighing system eliminates the need for a weigh batch bin. Several batches of aggregate mix can be weighed without recharging.

Batches up to seven yds can be weighed out in a single operation. Ross PORTA-PLANT, BOX 446, BROWNWOOD, TEXAS.

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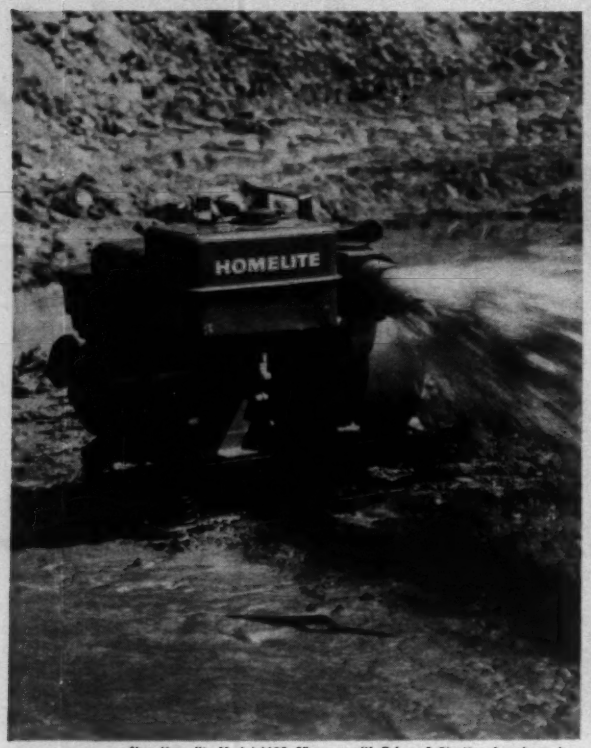
Homelite Pumps and Generators with **4-Cycle** Engines



New Homelite Model 44S2, 2" pump with Briggs & Stratton 4-cycle engine.

New Homelite Model 46A115, 1500 watt generator with Clinton 4-cycle engine.

For Greatest Value at Lowest Cost

NOW you can choose the exact portable pumps and generators your jobs require from the most complete line of models ever offered by any manufacturer: economical, 4-cycle engine driven units or finest-quality models driven by Homelite's famous, 2-cycle engines.

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Write or call for complete information and a demonstration on your job. Do it today!

Homelite factory branches are located throughout the country. Your nearest one is as near as your phone. Call them or write for convincing demonstration or rapid service in any way.

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Many Crane Combinations Offered

Model 45-M, 47-M, 65-M, 75-M and 77-M crawler cranes are rated from 30 to 75 tons; shovel capacities are from 1¼ to 1¾ cu yd.

Wide ranges of axle widths, crawler side frame lengths and crawler belt widths permit selection of combinations to meet a wide variety of flotation and lifting radii problems, according to the manufacturer. Crawler side frame and axle designs are said to permit convenient removal of the side frames as units for shipment.

Power load lowering, third drum, independent boomhoist, independent travel, torque converters and multiple speed transmissions are among the accessories available, according to the manufacturer.

Crane models include capacities of 30, 40, 50, 60 and 75 tons, with boom and jib maximum combinations from 115 to 200 ft. The machines include drag and clamshell capacities to 2½ cu yd, hoe capacities to 2¼ cu yd and shovel capacities of 1¼, 1½ and 1¾ cu yd. MARION POWER SHOVEL CO., MARION, OHIO.

Dodge Adds 'Dart' to Pickups

A Dart ½-ton pickup, a compact ¾-ton forward control unit, and a 2½-ton heavy tractor have been added to the Dodge truck line for 1961. This brings to 140 the number of models available under the Dodge nameplate, including conventional-cab, cab forward, four-wheel drive, school-bus chassis, and tandem units.

Eleven gasoline engines will be offered, in horsepower from 101 to 228. Eight diesels from 160 to 250 hp will also be available. The new models feature a choice of two inclined overhead valve 125- and 140-hp engines.

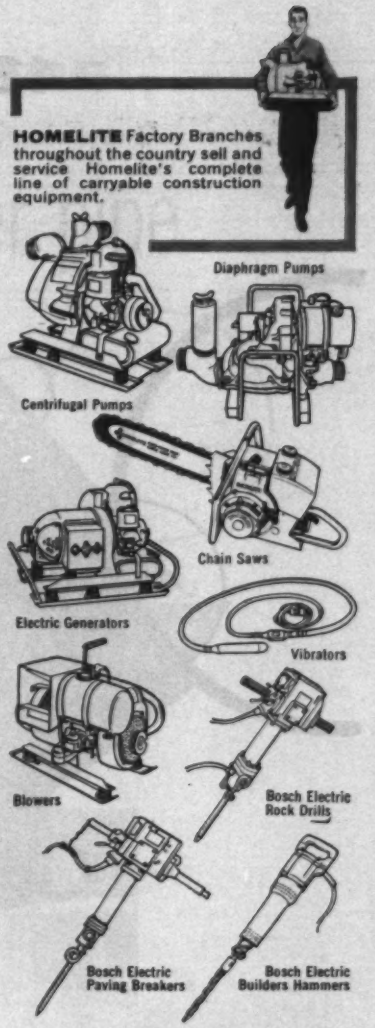
Light and medium tonnage trucks are 7 in. lower and 4 in. wider this year. Dodge claims steering effort has been reduced 30% on light-tonnage models and 15% on medium tonnage models.

The button-controlled Loadflite automatic transmission is one of six available on light models. Rear axle capacities for medium tonnage trucks range from 11,500 to 18,500 lb. Torqmatic transmission is available for heavy duty models. DODGE PUBLIC RELATIONS, 7900 JOSEPH CAMPAU, DETROIT 31, MICH.

Platform Trailer Extends to Become 55-ft Pole Trailer

The Atlas "Extend-Able" combination platform pole trailer is a 35-ft platform trailer for the normal hauling of flat loads, but it's adjustable to a full length pole trailer of 55 ft. Intermediate 5-ft spacings are also provided.

Each 5-ft adjustment is made by one man, with extended length securely and automatically locked into position on steel telescoping tubes. Air hose and electric lines are positioned to extend with each 5-ft adjustment. ATLAS TRAILER MFG. CORP., 390 TONNELLE AVE., JERSEY CITY 6, N. J.



HOMELITE FACTORY BRANCHES

EAST: CONNECTICUT: Greenwich, Hartford • NEW JERSEY: North Arlington, Woodbridge • NEW YORK: Albany (Latham), Buffalo, New York (North Arlington, N. J.), Rochester, Syracuse • MAINE: Orono • MARYLAND: Baltimore • MASSACHUSETTS: Boston (Allston) • PENNSYLVANIA: Altoona, Erie, Harrisburg, Hazleton, Philadelphia, Pittsburgh, Malvern • VIRGINIA: Arlington, Richmond, Roanoke • WEST VIRGINIA: Charleston, Clarksburg

SOUTH: GEORGIA: Atlanta • FLORIDA: Jacksonville, Miami • LOUISIANA: New Orleans (Metairie), Shreveport (Bossier City) • NORTH CAROLINA: Charlotte, Raleigh • OKLAHOMA: Oklahoma City • TENNESSEE: Knoxville, Memphis • TEXAS: Dallas, Lufkin

MID-WEST: ILLINOIS: Chicago (Stone Park) • INDIANA: Indianapolis • MICHIGAN: Detroit, Grand Rapids • MINNESOTA: St. Paul • MISSOURI: Kansas City, St. Louis • NEBRASKA: Omaha • OHIO: Cincinnati, Cleveland, Toledo • WISCONSIN: Milwaukee

WEST: CALIFORNIA: Fresno, Los Angeles (Alhambra), Sacramento, San Francisco • COLORADO: Denver • OREGON: Portland • UTAH: Salt Lake City • WASHINGTON: Seattle, Spokane

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Thickness Combinations...

money when you need water pipe

Between the range of diameters from 6" to 36", Armco Welded Steel Pipe is available in 132 different diameter-wall thickness combinations. This unparalleled range of sizes means you can specify the pipe that meets your requirements EXACTLY. No need to settle for the "next heaviest wall" and all the extra cost of extra material.

Is the extra weight a significant amount? Consider this example: In one mile of 14" OD pipe, the weight difference between .172" wall thickness and .188" wall thickness is *six tons!* In larger pipe, the weight difference is even greater.

Arrange now to discuss your Welded Pipe requirements with your nearby Armco man. Armco Pipe is made to meet the applicable Standards of AWWA and Underwriters' Laboratories, Inc., and ASTM Specifications. Use the coupon to tell us your needs. No obligation! Armco Drainage & Metal Products, Inc., 5000 Curtis Street, Middletown, Ohio.

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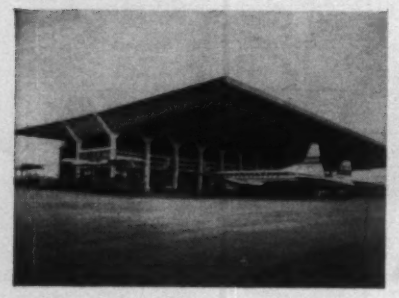
8th major project by Vibroflotation®
at Miami International Airport

Vibroflot machines compacting sand foundation to a depth of 20' for new 2-level, 5-acre parking deck between the airport's entrance ramps. Architects: Steward-Skinner Associates; Consulting Engineer: William H. Weaver; General Contractor: Fred Howland, Inc., – all of Miami, Florida.

Other projects at Miami International Airport

National Airlines	(1) Administration Building
	(2) Cantilever Hangar
Delta Airlines	(3) Loading Pier
	(4) Maintenance Hangar
	(5) Fuel Tanks
American Airmotive Corp...	(6) Cantilever Hangar
Miami Skyways Motel	(7) Deluxe Motel



Cantilever hangar pictured at left was project No. 2 for National Airlines. Architect: Weed, Russell, Johnson and Associates, Miami; Consulting Engineer: Ammann & Whitney, New York; Soil Consultant: D. M. Burmister, New York; Contractor: Fred Howland, Inc., Miami.

Write for Booklet E-27

VIBROFLOTATION FOUNDATION CO.

930 FORT DUQUESNE BOULEVARD, PITTSBURGH 22, PA.

Briefs . . .

• **Frost chisel**—An attachment for the Arrow Mobile Hydraulic Hammer is a cutting tool designed to work in deep frost. Attached to the hammer, the frost chisel can be repeatedly dropped with a force of as much as 9,000 ft lb to penetrate the deepest frost. The manufacturer reports that it is also being used to cut shale. ARROW MANUFACTURING CO., 194 W. DAKOTA AVE., DENVER 9, COLO.

• **Big dump truck**—Model 40SL has 40-ton capacity and is reported to be the largest two-axle dump truck ever placed in service. The unit is 30 ft long, 13 ft high and 12 ft high. Power is supplied by a V-12 diesel engine coupled with a four-speed transmission-converter. KW—DART TRUCK CO., KANSAS CITY 41, MO.

• **Waterstop**—A plastic chamfer-strip that rounds corners of concrete columns is claimed to be completely water and weather resistant. The rounded corner prevents stripping and the smooth surface adds strength to the porous masonry column, says the manufacturer. WALJOHN WATERSTOP, INC., 400 88TH ST., BROOKLYN, N. Y.

• **Greater lift**—The lift capacity of the lift arm and pallet fork attachment for the Kwik-Mix Hi-Lifter has been increased 50% according to the manufacturer. The attachment is reported capable now of handling a 3,000-lb. load at a 35-lift height. THE KWIK-MIX CO., 235 W. GRAND AVE., PORT WASHINGTON, WIS.

• **Floor repair**—Revco Crack-Fix—finely-ground, plastic-based aggregate—can repair cracks and shallow holes in concrete, asphalt or wood floors. The plastic material is ready for traffic immediately after application. REVERE CHEMICAL CORP., UNIVERSITY CENTER STATION, CLEVELAND 6, OHIO.

• **Guaranteed roof**—An aluminum roof with Butlerib configuration is now available with a 20-year guarantee for the first time. It becomes effective immediately for all shipments made on or after June 1, 1960. BUTLER MANUFACTURING CO., 7400 E. 13TH ST., KANSAS CITY 26, MO.

• **Drill bits**—A line of percussion drill bits have carbide inserts positioned in alloy-steel bodies. Bits are available with 6-deg and 11-deg tapers and in $1\frac{3}{8}$-in., $1\frac{1}{2}$-in., and $1\frac{5}{8}$-in. diameters. VASCOLOY-RAMET CORP., 800 MARKET ST., WAUKEGAN, ILL.

17 years of continuous operation... plant still has original engines!

Here's another record of trouble-free International power on a heavy-duty construction job. Three 17-year-old International UD-18 diesel engines are still producing efficient power on Hot Mix Plant No. 1 for Kelley & Meyer Co., Youngstown, Ohio. One engine powers mixer, hot elevator and screen, another one drives the cold elevator and dryer, while the third powers the dust collector and 3-ft., 6-bladed fan. The company has 11 IH engines in operation, plus one standby unit, on four asphalt plants in Ohio and Pennsylvania.

"Years of experience with International engines has proven their ability to power a plant to maximum production with real day-in-day-out dependability," says Plant Superintendent Clyde Clabaugh. "These three old engines have put out over half a million tons of hot mix, and all they ever require is normal maintenance. With a record like that, I personally think International power can't be beat!"

Contractors all over the country use dependable International engines for maximum efficiency on their construction equipment. You too, can profit from the many advantages in the full line of International's diesel and carbureted engines—16.8 to 385 max. hp. Call your International Engine Distributor or Dealer soon and find out how little it will cost you to power —or re-power—your equipment with International.

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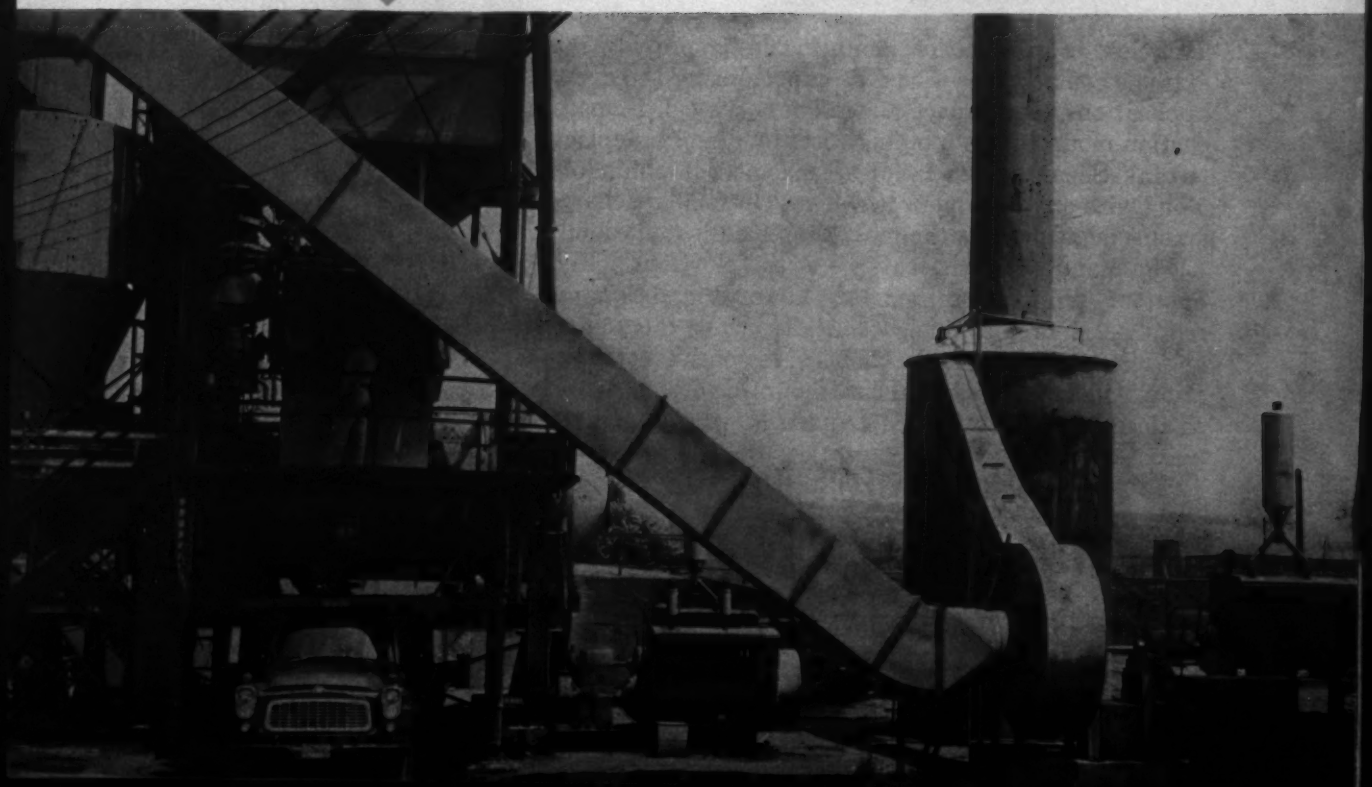

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The many desirable features of the Horizontal End Suction Pumps are retained . . . motor and rotary assembly easily removable without disturbing the suction or discharge piping . . . low NPSH . . . smooth quiet operation. Available in vertical base mounting design as well as close coupled or flexible coupled horizontal models.

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Men and Jobs

Carter Page

Water Development Expert Retires From Corps

Carter Page, one of the nation's outstanding authorities on water resource development, has retired as chief of the civil works planning division of Corps of Engineers.

Mr. Page joined the federal service 31 years ago to work on the Nicaragua Canal Survey. He later went to the Board of Engineers for Rivers and Harbors where he contributed to studies that led to the first general flood control act in 1936.

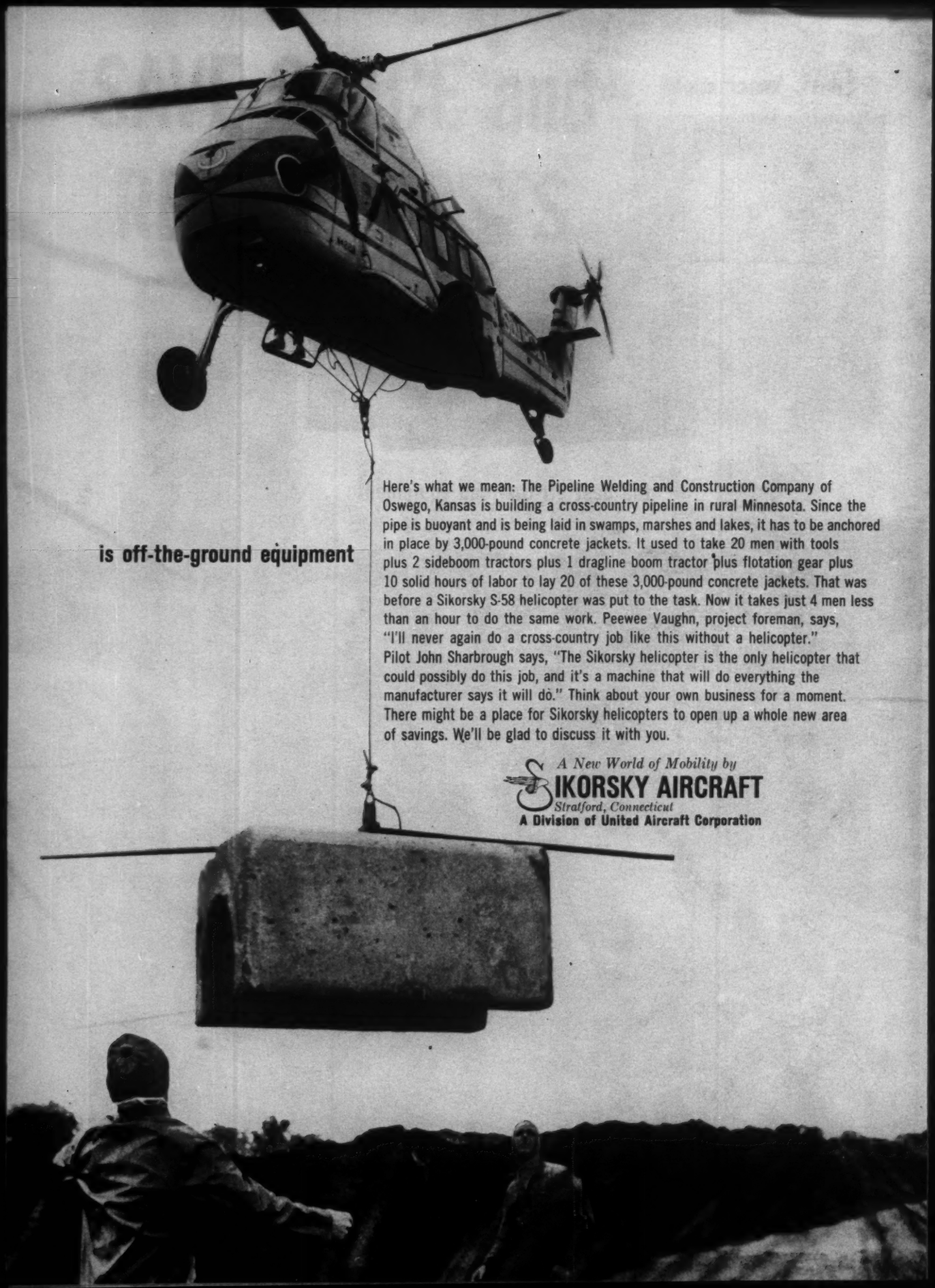
Just before the outbreak of World War II, he transferred from civil works to military construction and aided in organizing an Air Force Construction Section for the Corps. Early in 1942 he entered on active duty with the Corps. After service in Sicily, Italy and Southern France, he left the service in 1946 with the rank of Colonel to return as a civilian engineer to the Office, Chief of Engineers.

Since 1954 Mr. Page has served as chief of planning division for civil works, active in planning flood control, navigation and related river basin improvements. He expects to remain in his native Virginia as a consultant on water resources.

Business . . .

G. Glen Gage, in association with Sacremento builder **Mike Heller,** has formed Construction Consultants Inc. in Sacremento, Calif. Mr. Heller, 1955 president of the California chapter of Associated General Contractors, owns Continental Construction Co. and is vice president of Delta Prestress Concrete Co. Mr. Gage has been doing consulting work overseas since 1945.

the best off-the-road equipment . . .



is off-the-ground equipment

Here's what we mean: The Pipeline Welding and Construction Company of Oswego, Kansas is building a cross-country pipeline in rural Minnesota. Since the pipe is buoyant and is being laid in swamps, marshes and lakes, it has to be anchored in place by 3,000-pound concrete jackets. It used to take 20 men with tools plus 2 sideboom tractors plus 1 dragline boom tractor plus flotation gear plus 10 solid hours of labor to lay 20 of these 3,000-pound concrete jackets. That was before a Sikorsky S-58 helicopter was put to the task. Now it takes just 4 men less than an hour to do the same work. Peewee Vaughn, project foreman, says, "I'll never again do a cross-country job like this without a helicopter." Pilot John Sharbrough says, "The Sikorsky helicopter is the only helicopter that could possibly do this job, and it's a machine that will do everything the manufacturer says it will do." Think about your own business for a moment. There might be a place for Sikorsky helicopters to open up a whole new area of savings. We'll be glad to discuss it with you.

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A Division of United Aircraft Corporation

Obituaries

John Reber, 72, noted for his "Reber Plan". Although he had no formal engineering training, he conceived a plan that would divide San Francisco Bay into a salt water bay and two fresh water lakes with a series of earth and rockfill dams (ENR July 11, 1946, p. 108). Mr. Reber made the planning, study, and promotion of this scheme his life's work. As a result of the plan, the U.S. Army Corps of Engineers constructed a one-acre Bay model with which to study the water and silt movement in the Bay. The Corps is studying the feasibility of the Reber Plan and expects to have the results by 1961 or 1962.

Stephen E. Slocum, 85, consulting engineer from Ardmore, Pa. Known as an authority on marine engineering, he was also consultant on several large general construction projects, including Pennsylvania Railroad's Suburban Station in Philadelphia.

Samuel Shapiro, 80, builder in the New York City area since 1900. He had been president of Shapco Builders, Inc., and was active in the construction of Lenox Terrace, a $30-million Title I project.

James F. Kelly, 75, owner of McClair Asphalt Co., Fairmont, Ill. He had been in the building business for many years in association with his brothers and was a past president of both the Illinois Contractors' Association and the Illinois Road Builders Association.

Ralph William Stewart, 82, retired Chief Deputy City Engineer and head of the bridge and structural design division of the Los Angeles Bureau of Engineering. He had 38 years of continuous service with the city.

Harold F. Clemmer, 72, for 29 years the engineer of materials for the District of Columbia Highway Department. Since his retirement last year, Mr. Clemmer had worked as a highway consultant.

Harry C. Vensano, 78, director of public works in San Francisco from 1942 to 1950 when he resigned to go into private civil engineering practice. Before 1942, he had been chief civil engineer for Pacific Gas & Electric Co.

Ola T. Slater, 66, former supervising engineer for Gibbs & Hill, Inc., New York City consulting engineers. He also had worked with the New York City Board of Water Supply on the Delaware Aqueduct project.

PACEMAKER Augers 229.2', Samples, Performs 53 Penetration Tests in 16.5 Hrs!

"The main reason we bought this drill was its versatility," says Leland J. Walker, owner of Northern Testing Laboratory, Great Falls, Montana. His hydraulic-powered B-52 PACEMAKER is equipped for diamond coring, wash boring and drilling with standard or Mobile Hollow Stem Augers.*

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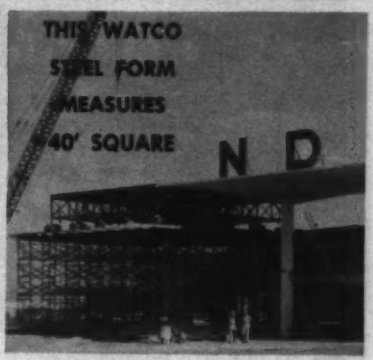

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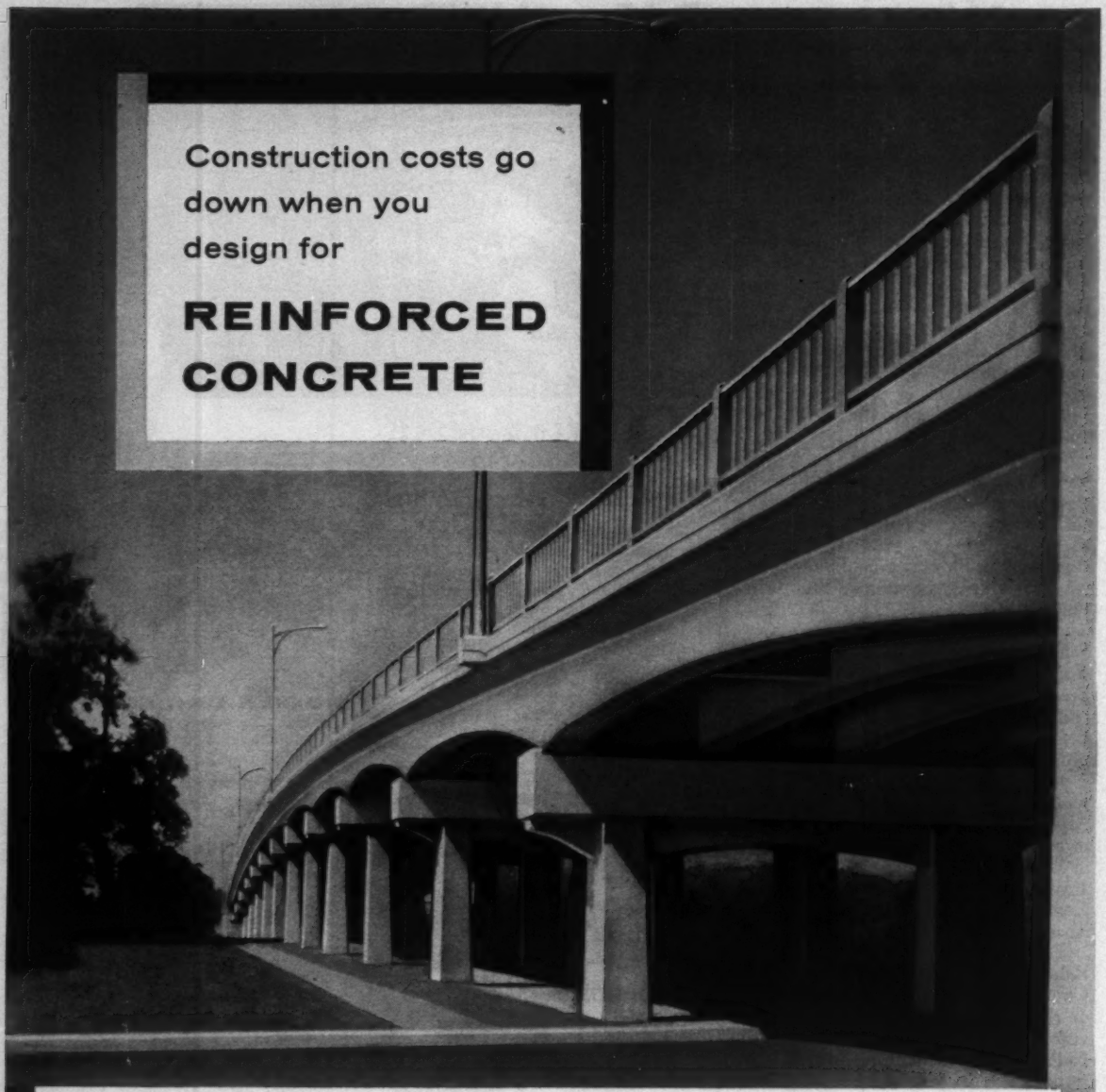

10th Street Overpass on U.S. Highway 30, Caldwell, Idaho
Designers: State of Idaho, Department of Highways
Contractors and Engineers: Babbitt Construction Company, Boise, Idaho

When compared with other construction materials, the cost of reinforced concrete construction is usually less. Projects start on time, finish on schedule . . . no expensive delays due to material shortages or field design changes. In addition, you enjoy the added advantage of complete design flexibility to meet the requirements of varying elevations and terrain.

Reinforced concrete structures are lower in after costs, too! They require less maintenance—never need painting, and are resistant to wind, shock, and earthquake.

On your next project, design for reinforced concrete and compare its many superior advantages.

Concrete Reinforcing Steel Institute

38 South Dearborn Street
Chicago 3, Illinois

17-6

Highway Prices—District of Columbia

Average Contract Prices 1st Half—1960

Bid Awards, 1960—1st Half

Roadways

Items	Unit	No. Jobs	Avg.	Range Unit Prices
Excavation, ordinary	cy	9	$1.97	$0.85- 3.50
hard surface	cy	9	3.49	2.00- 5.00
hand	cy	9	11.53	3.80-15.00
Borrow for embankments	cy	4	2.60	1.40- 4.00
subbase	cy	3	3.26	3.00- 3.80
soils base	cy	9	3.20	2.62- 4.00
Soils base crse	cy	1	2.70	
8"	sy	5	0.80	0.62- 1.26
Interceptor drains 6"	lf	5	2.47	1.40- 3.50
8"	lf	7	2.63	1.45- 3.50
Excavation trench, add	cy	5	4.29	2.00- 6.00
Pipe, connecting 6"	lf	6	3.08	1.45- 4.00
8"	lf	7	2.90	1.45- 4.00
Borrow for trench bf	cy	5	3.99	2.20- 6.00
Lumber, lip	Mbf	1	60.00	
PCC pvt, reinf	cy	7	32.50	22.00-40.00
10"	sy	3	7.50	7.10- 3.50
9"	sy	5	6.84	6.10- 7.80
Wire fabric reinf #50	sy	9	0.65	0.45- 1.00
Expansion joint filler	lf	6	1.20	0.80- 2.00
Cmt, std add	bbl	9	4.69	4.00- 5.50
Calcium chlor accel	lb	11	0.04	0.02- 0.07
PCC base, reinf	cy	9	29.00	20.00-36.00
10"	sy	1	6.41	
8"	sy	6	6.90	6.15- 7.80
drwy & alley ent 7"	sy	4	7.08	6.00- 7.80
sidewalks	sy	7	5.28	5.10- 6.00
repairs	sy	9	5.21	4.00- 5.80
curb "A", 15"	lf	7	2.59	2.30- 3.20
Expansion joint filler alleys	lf	10	0.56	0.37- 0.75
sidewalks	lf	10	0.42	0.22- 0.65
PCC curb variable	cy	6	66.66	40.00-75.00
comb curb & gutter "A"	lf	8	3.48	3.00- 4.10
gutter	sy	10	7.91	5.70- 9.50
islands, cl B	cy	6	58.00	38.00-78.00
Sidewalk, brick repairs	sy	3	$4.36	$3.50- 5.00
Cut to neat line	lf	6	0.71	0.30- 1.00
Anchor bolts	ea	6	2.30	1.10- 3.50
Curb sat cir stone 8"x12"	lf	4	2.95	2.00- 3.80
reset	lf	3	3.60	3.00- 4.00
8"x8", 8"x12", 6"x 20", st or cir	lf	6	3.45	2.00- 4.50
PCC alley reinf 7"	sy	6	6.00	6.00- 8.30
Curb adj, stone or conc	lf	2	2.10	1.20- 3.00
MH adj, frames & basin cover	ea	10	8.90	5.00-15.00
Vlv wtr, adj, frame casing	ea	8	7.75	5.00-12.00
PUC MH frames, adj				
less than 6sf	ea	2	3.00	1.00- 5.00
6-15 sf	ea	2	5.50	1.00-10.00
over 15 sf	ea	2	5.50	1.00-10.00
Asph pvt sht, binder incl	sy	4	2.14	1.97- 2.40
mod binder incl	sy	2	1.80	1.80- 1.80
cone binder	t	5	15.20	12.00-18.00
mod	t	8	14.12	10.00-16.00
sht surface	t	8	17.10	14.00-20.00
conc base cl A	t	9	12.93	8.25-17.00
surface cl C	t	11	13.57	9.90-18.00
D	t	3	12.42	8.25-18.00
surface, repair by heat method	t	5	29.40	27.00-32.00
PCC pvt repair	cy	1	44.00	
Dampproofing	sy	1	0.50	
Waterproofing, membrane	sy	1	2.00	
PCC wall-step coping, cl B	cy	8	73.12	50.00-100.00
Topsoil, 4"	sy	4	0.60	0.50- 0.75
Sod-sodding incl topsoil	sy	9	0.85	0.40- 1.20
Handrail	lf	4	5.85	3.00-10.00
Walls, stone masonry	cy	6	84.42	61.00-100.00
Cone for footings cl BB	cy	5	34.20	25.00-50.00
MH, sew or water, furn frames & covers	ea	8	52.00	45.00-60.00
PCC curb cir reinf	lf	6	3.64	2.90- 4.60
recessed	lf	1	2.60	
& gutter cir reinf	lf	8	4.30	3.30- 4.80
median walk	sy	3	5.03	4.00- 5.60
Cmt cone cir curb for drwy & alley corners	lf	9	3.44	2.80- 5.00
Steel reinf, for steps	lb	5	0.236	0.13- 0.30

Bridges

Items	Unit	No. Jobs	Avg.	Range Unit Prices
Excavation, unclassified	cy	4	$2.52	$1.20- 3.60
structure	cy	4	4.13	3.50- 4.55
Backfill and fill	cy	8	3.46	2.00- 7.20
porous	cy	4	6.25	5.00- 7.50
Dampproofing	sy	5	1.29	0.95- 2.00
Waterproofing, membrane	sy	4	5.93	2.37- 7.50
Conc cl BB, footing	cy	4	35.58	24.30-50.00
wall	cy	3	61.33	51.80-79.00
Conc cl BB, superstructure	cy	4	76.00	56.00-99.00
approach slab	cy	4	29.75	25.00-38.00
Steel, reinf	lb	6	0.14	0.12- 0.17
structural carbon	lb	5	0.149	0.10-0.179
Piles, test	lf	1	20.00	
Facing, stone masonry	cf	3	6.10	5.60- 6.50
Aluminum railing, hand	lf	4	8.07	7.00- 9.10
Steel H beams, piles in pl	lf	1	8.00	

Sewers

Items	Unit	No. Jobs	Avg.	Range Unit Prices
Excavation, unclassified	cy	10	$4.94	$2.25- 8.80
Masonry, brick	cy	10	108.00	90.00-120.00
RCSP, 30"	lf	4	14.16	11.35- 16.80
24"	lf	6	9.66	8.30- 12.50
21"	lf	5	8.20	7.25- 9.80
18"	lf	9	7.16	5.60- 11.00
15"	lf	7	6.29	4.90- 10.00
12"	lf	1	4.00	
Basins, elongated ≠ 2	ea	4	377.50	300.00-550.00
≠ 1	ea	8	427.50	300.60-975.00
standard	ea	8	303.12	250.00-400.00
RCSP basin connection 15"	lf	4	11.57	6.05- 13.50
15"	lf	9	9.29	5.20- 13.00
Gravel, subgrade	t	10	7.72	4.20- 10.00
Lumber, bracing	Mbf	3	115.00	95.00-150.00

See also 1st Quarterly Cost Issue, ENR—March 24, 1960 for District of Columbia Highway Prices for 1959—2nd half

Low Bid of $1,576,650 Takes N. J. Pier Project

The Port of New York Authority will add a wharf to berth 50, Elizabeth Port Authority Piers, New Jersey, for $1,576,650.

The low bid came from Horn Construction Co., Inc., Merrick, L. I., 10% below J. Rich Steers, Inc., New York City, and 12% under Spiniello Construction Co., Orange, N. J., high of the three bids entered. J. M. Kyle, chief engineer of the Port of New York Authority, is the consultant.

The dimensions of the wharf will be 800 ft across the head of the channel, and 464 ft along the sides.

A bonus of $300.00 per day up to $9,000 will be paid for each day sliced off the completion date, March 31, 1961.

Prevailing wage rates in Elizabeth, N. J. include: carpenters, $4.25-$4.75 per hr plus $0.15 welfare, and $0.10 pension; structural iron workers, $4.85 per hr plus 3% welfare, and 5% pension; laborers, $3.15 per hr plus $0.15 welfare, and $0.10 pension.

The bidding included:

1C Horn Construction Co., Inc., Merrick, L.I., N.Y. — $1,573,650
2 J. Rich Steers, Inc., New York, N.Y. — 1,746,300
3 Spiniello Construction Co., Orange, N.J. — 1,785,000
EE J. M. Kyle, Port of New York Authority — 1,600,000

Bids: 9-7-60 Items	Unit	Quantity	Unit Prices 1C	2
Piles, greenheart	lf	76,000	$2.90	$3.25
pine	lf	55,000	2.70	2.75
Rip-rap	t	102,000	4.00	4.60
Steel, shoes for timber piles	ea	800	11.00	13.30
Unclassified work	ls	job	787,950	868,210

Liquidated damages: $2,000 per day maximum
Completion date: 3/31/61

Just Out—3rd Edition

CONSTRUCTION ESTIMATES AND COSTS

By H. E. PULVER
Consulting Engineer

You can make sounder, more accurate construction estimates with the tested methods brought to you in this practical book. It covers every detail of the estimator's job—describes step-by-step how to best compute material, labor, equipment, and overhead costs, plus the necessary profit. Covered are all kinds of light and heavy construction work, including excavating, piling, and bracing—using concrete, masonry, wood, and structural steel in various ways—roofing and flashing; lathing and plastering, heating, air-conditioning, plumbing, electrical work, and others. This revised edition provides fresh material on asphalt walks, driveways and pavements—plus modern data on wages, materials, and prices. In addition, it presents a new method for computing equipment ownership and operating costs, and contains many complete illustrative estimates. Arithmetical methods for accurately estimating costs are fully described and illustrated. 3rd Ed., 640 pp., 126 illus., $12.00

Just Out

ERECTING STRUCTURAL STEEL

By SAMUEL P. OPPENHEIMER
Professional Engineer

To help you effectively plan and erect a wide variety of steel structures a wealth of methods and working information is presented in this book. It gives you a sound knowledge of the many factors of structural erecting such as types, names, descriptions, and uses of equipment; tools and scaffolding; tested work methods; erection methods; and the business aspects of estimating, selling, and managing. Included are facts on equipment and methods involved in the erection of tower structures by Chicago and basket booms, and those involved in erection by automotive, crawler, and slewing cranes. The book also explains how to solve problems requiring stresses developed in supports, fastenings, parts and riggings, and shows how to analyze structural, reinforcing, and miscellaneous iron plans. 272 pp., 111 illus., $9.50

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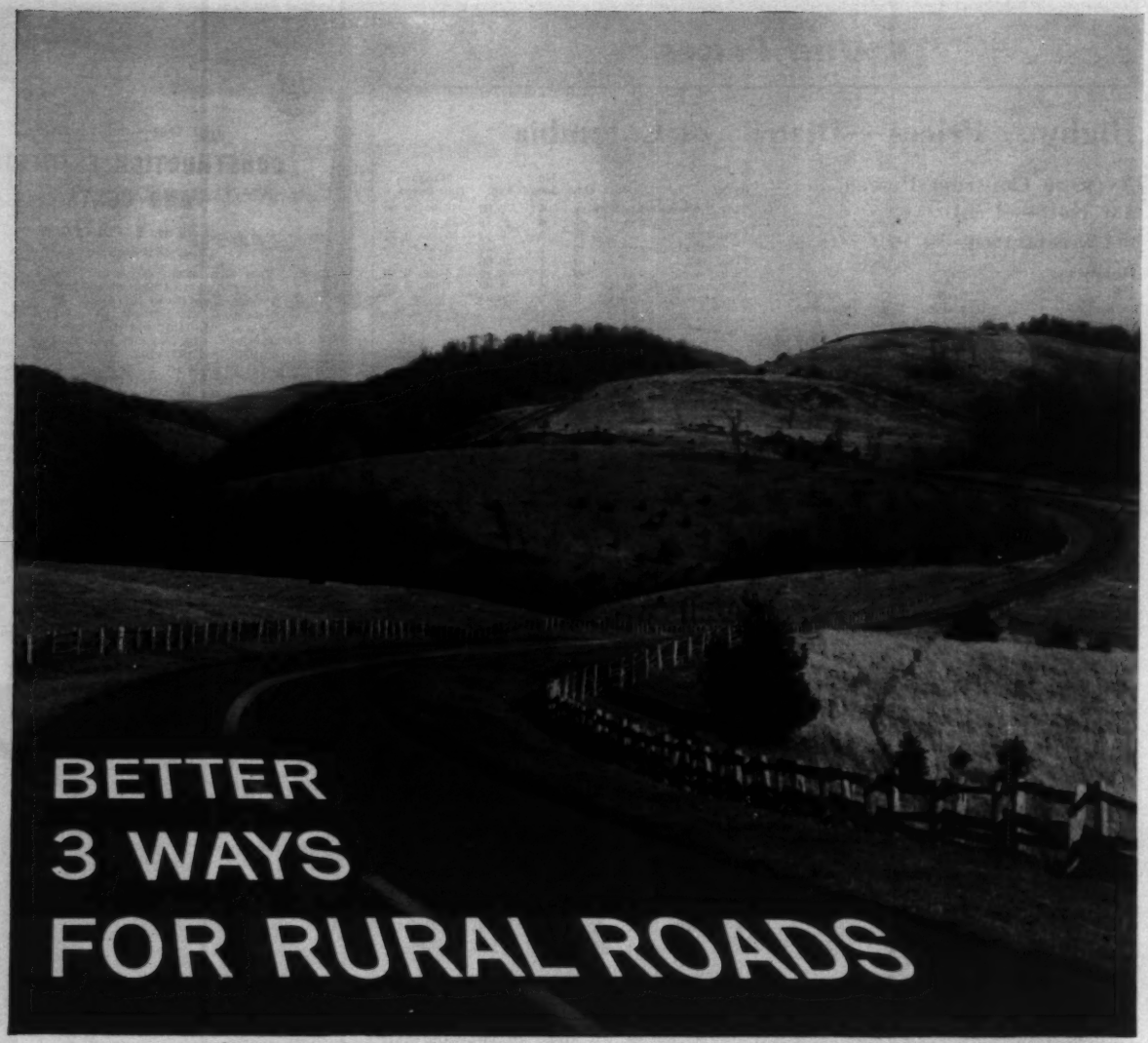

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Labor and Materials Prices

Monthly Market Quotations by ENR Field Reporters

HOURLY WAGE RATES—Base rate + fringe benefits

	Common Labor: Building	Common Labor: Heavy Const	Bricklayers	Carpenters	Struct. Iron Workers	Hoisting Engineers	Plasterers	Electrical Workers	Steamfitters	Truck drivers: 1½ T	Truck drivers: under 4 cy	Truck drivers: over 4 cy
Atlanta	$2.00	$2.00	$4.00	$3.35	$3.60+7½¢	$3.675	$3.50+3¢	$4.00+5¢	$3.85+22½¢	$2.10	$2.20	$2.45
Baltimore	2.27+7½¢	2.27+7½¢	4.10+20¢	3.60+7½¢	4.00+178¢	3.35/4.05+10¢A	3.95+13¢	3.85+7½¢	3.81+175	2.20+15¢	2.20+15¢	2.20+15¢
Birmingham	1.95	2.05	4.05	3.23	3.65+10¢	3.30	3.37	3.65	3.70+12¢	2.00+7½¢	2.20+7½¢	2.45
Boston	2.75+10¢	2.55+10¢	4.05+30¢	3.65+10¢	4.14+20¢	4.05+20¢	3.90+15¢	4.10+25¢	3.95+27¢	2.70+23¢	2.70+23¢	2.70+23¢
Chicago	3.02½+7½¢	3.02½+7½¢	4.225+10¢	3.91+20¢	4.35+16¢	3.90+5¢	4.00+27¢	4.30	4.10+25¢	2.54+175¢	.....	.....
Cincinnati	2.90	2.90	4.025+12¢	3.90	3.95+10¢	3.575/3.80A	3.875+.01	4.00+.511	4.10+9½¢	2.65+62½¢	2.70+6½¢	2.75+6½¢
Cleveland	3.37	3.285	4.085+10¢	4.11	4.01+10¢	4.11	4.11	4.17	3.91+2½¢	2.92+15¢	2.92+15¢	2.92+15¢
Dallas	1.85	1.85	4.10	3.45	3.55+7½¢	3.50	3.75+13¢	3.625+7½¢	3.70+8½¢	1.80/2.625	1.80/2.625	1.80/2.625
Denver	2.32	2.32	4.00	3.60	3.71+10¢	3.25	3.80+12¢	4.05+47¢	3.95+10¢	2.40/2.60	2.75	2.90
Detroit	2.90+34¢	2.90+34¢	3.98+33¢	3.63+46¢	4.00+27½¢	3.63+39½¢	3.75+38¢	4.00+52	3.90+49¢	3.03+175¢	3.03+175¢	3.03+175¢
Kansas City	2.58	2.63	4.075	3.625	3.775	3.57	3.875	3.90+427¢	3.90+9½¢	2.555	2.555	2.63
Los Angeles	3.08+10¢	3.08+10¢	4.20+25¢	3.825+20¢	4.27½+25½¢	3.81+20¢	4.25+42½¢	4.65+48	4.33+44¢	3.385+10¢	3.385+10¢	3.555+10¢
Minneapolis	2.85	2.85	3.875+15	3.50	3.62	3.60	3.60+33¢	3.70+44¢	3.62+35¢	2.35	2.85	3.00
New Orleans	1.87½	1.87½	3.67½+7½¢	3.25	3.55+10¢	3.375+7½¢	3.27+5¢	3.90+7½¢	3.70+7½¢	3.375+7½¢	3.375+7½¢	3.375+7½¢
New York	3.45+28¢	3.45+28¢	4.80+60¢	4.55+36¢	4.60+65¢	4.80+33¢	4.70+67¢	4.15+1.25	4.65+61¢	2.35+20½¢	3.40+28½¢	3.40+28½¢
Philadelphia	2.55+10¢	2.60+15¢	4.25+17¢	3.885+10¢	4.45+23¢	3.935/4.215+10¢A	4.15+20¢	4.37½+16¢	4.20+31½¢	2.45+15	2.45+15½¢	2.45+15
Pittsburgh	2.725+20¢	2.55+20¢	4.45+20¢	3.975+20¢	4.30+20¢	3.73+20¢	4.225+20¢	4.60+34½¢	4.15+20¢	2.50+20¢	2.635+20¢	2.735+20¢
St. Louis	2.925+10¢	2.925+10¢	4.05+32½¢	3.875+10¢	3.875+10¢	3.95	4.00+07½¢	4.11+50¢	4.27½+25½¢	2.93+15¢	3.13+15¢	3.23+15¢
San Francisco	3.045+10¢	3.045+10¢	4.40+42½¢	3.725+36¢	4.275+25¢	3.80+35¢	3.79+63¢	4.23+29¢	4.36+72¢	3.19+11¢	3.27+11¢	3.08+11¢
Seattle	3.00	3.00	4.15+30¢	3.38+20¢	3.76+10¢	3.84+20¢	3.72+30¢	3.95+27¢	3.89+28¢	3.40+20¢	3.40+20¢	3.60+20¢
Montreal	1.75+4¢	1.75+4¢	2.55+8¢	2.35+5¢	2.55+6¢	2.35+5¢	2.65+6¢	2.45+5¢	2.62+6¢	1.75+4¢	1.75+4¢	1.75+4¢
Toronto	2.00+8¢	2.00+8¢	3.15+13¢	2.90+12¢	3.05+12¢	3.15+13¢	3.20+21¢	3.52+14¢	3.47+13¢	2.05+15¢	2.05+15¢	2.05+15¢

	Tractor Operators incl. bulldozers: 34-49 hp	70-100 hp	100 & over	Tractor scraper 15-18 cy	Power cranes & shovels: ½ cy	¾ cy	Motor grader oper	Air comp oper	Air tool oper
Atlanta	$3.15	$3.15	$3.15	$3.15	$3.675	$3.675	$3.15	$2.825	$2.22
Baltimore	3.65+10¢	3.65+10¢	3.65+10¢	3.65+10¢	4.05+10¢	4.05+10¢	3.85+10¢	3.25+10¢	2.325+7½¢
Birmingham	3.30	3.30	3.30	3.30	3.30	3.30	3.30	2.89	2.15
Boston	3.52½+20¢	3.52½+20¢	3.52½+20¢	3.52½+20¢	3.90+20¢	3.90+20¢	3.52½+20¢	3.45+20¢	2.90+10¢
Chicago	3.65+5¢	3.80+5¢	3.70+5¢	3.70+5¢	4.25+5¢	4.25+5¢	3.70+5¢	3.55+5¢	2.95+5¢
Cincinnati	3.575+10¢	3.575+10¢	3.575+10¢	3.575+10¢	3.575+10¢	3.80+10¢	3.80+10¢	3.90+10¢	2.90+10¢
Cleveland	3.86	3.86	3.86	3.86	4.11	4.11	3.86	3.735	3.735
Dallas	1.80/2.625	1.80/2.625	1.80/2.625	1.80/2.625	3.225	3.225	1.80/2.625	2.00	2.00
Denver	2.50	3.10	3.10	3.10	3.25	3.25	3.10	3.10	2.60
Detroit	3.63+39½¢	3.63+39½¢	3.63+39½¢	3.63+39½¢	3.63+39½¢	3.63+39½¢	3.63+39½¢	3.63+395¢	3.03+34¢
Kansas City	2.875	3.325	3.325	3.325	3.57	3.57	3.325	3.325	2.675
Los Angeles	4.11+20¢	4.11+20¢	4.11+20¢	4.21+20¢	4.21+20¢	4.21+20¢	4.21+20¢	3.33+20¢	3.29+10¢
Minneapolis	3.23	3.45	.....	3.45	3.67	3.93+10¢	3.23	3.12	3.00
New Orleans	3.375+7½¢	3.375+7½¢	3.375+7½¢	3.375+7½¢	3.375+7½¢	3.375+7½¢	3.375+7½¢	2.70+7½¢	1.975
New York	4.175+33¢	4.175+33¢	4.175+33¢	4.30+34¢	5.05+40¢	5.05+40¢	4.30+34¢	4.30+34¢	3.90+.195¢
Philadelphia	3.63+10	3.775+10	3.775+10	3.90+10	4.345+10	4.345+10	3.765+10	3.51+10	2.40/2.50+10¢
Pittsburgh	3.73+20¢	3.73+20¢	3.73+20¢	3.73+20¢	3.92+20¢	3.92+20¢	3.92+20¢	3.43+20¢	2.80+20¢
St. Louis	4.00	4.00	4.00	4.00	4.00	4.00	4.00	3.45	3.45
San Francisco	4.01+35¢	4.01+35¢	4.01+35¢	4.14+35¢	4.31+35¢	4.31+35¢	4.21+35¢	3.48+35¢	3.475+10¢
Seattle	3.81+20¢	3.81+20¢	3.81+20¢	3.81+20¢	4.18+20¢	4.18+20¢	3.90+20¢	3.54+20¢	3.20+10¢
Montreal	1.95+4¢	2.18+5¢	2.18+5¢	2.18+5¢	2.45+5¢	2.45+5¢	2.18+5¢	2.05+5¢	2.05+5¢
Toronto	2.40+10¢	2.80+10¢	2.80+10¢	2.80+10¢	3.00+12¢	3.15+12¢	2.80+11¢	2.80+10¢	2.80+10¢

ENR Skilled Labor Average (Bricklayers, Carpenters, Iron Workers): $4.090, ENR Common Labor Average $2.739

Description of fringe benefits last appeared Sept. 22 1960. **A 1-2 drum.**

BUILDING BOARD & LATH AND INSULATION—DELIVERED TRUCKLOAD LOTS

	GYPSUM PLASTER BOARD tapered edge per Msq ft ⅜"	⅝"	GYPSUM BOARD LATH plain or perf per Msq ft ⅜" x 16" x 48"	GYPSUM SHEATHING tongue & groove per Msq ft ½" x 2' x 8'	FIBER BOARD SHEATHING asph impreg & coat per Msq ft ½" sq ed	½" T&G	FIBER BOARD INSULATION sq edge, paint per Msq ft ½"	MINERAL WOOL INSULATION loose, per 40-lb bag a	3" batts per M sf a	GLASS FIBER INSULATION loose, per 40-lb bag a	3" batts per M sf a	ALUMINUM FOIL 96# Kraft 1 side foil per roll of 250 s. f.	Expansible Blanket 2 layers fo ll per Msq ft
Atlanta	$65.00F	$55.00F	$42.50F	$88.00F	$72.00F	$127.00F	$75.00F	1.89z	$70.00F	$3.00	$80.00F	$4.77qi	.....
Baltimore	54.00	47.50	35.75	55.70	65.00	108.50	69.00	1.40F	67.50F	1.60F	47.00F	4.00F	$33.50F
Birmingham	68.90H	57.00H	47.77H	75.00H	67.50H	140.50H	83.50H	1.40	70.00	2.00	65.00	3.77gG	.....
Boston	60.00mH	50.00mH	35.00mH	55.00mH	65.00H	120.00H	79.00knH	1.40bH	75.00H	.....	75.00H	5.30mHS	83.50gH
Chicago	67.00	54.00	45.00	62.00	87.00	123.00	87.00	1.85	80.00	.....	63/65	5.25j	.....
Cincinnati	52.50wH	42.85wH	33.05wH	51.16wH	77.00wH	125.00wH	73.50wH	1.45wH	60.00wH	1.45wH	60.00wH	3.85/wJ	50.00wJ
Cleveland	62.00CF	56.50CF	41.50CF	65.00CF	90.00CF	129.00CF	80.00CF	1.35	75/80H	.....	67.00	14.00wJ	55.00J
Dallas	56.25	46.85	42.50	56.25	68.75	118.00	68.75	2.00	65.00	1.45	70.67	5.00gAG	45.00
Denver	62.50H	51.50H	43.00H	67.00H	62.50H	103.50H	77.00	1.55b	65.00wb	2.00b	65.00a	5.25	48.65
Detroit	66.00K	56.00K	42.45K	66.00K	48.50DK	85.65DK	62.50DK	1.30b	52.00	1.85b	80.00	.....	.....
Kansas City	72.00H	62.00H	45.00H	.....	75.00H	122.00H	80.00H	1.40H	75.00H	1.80H	75.00H	3.80d	60.00
Los Angeles	Q 66.00F	60.50F	0.33aF	64.50F	75.00F	125.00F	80.00F	76.00BeF	83.00F	1.35z	64.00	4.40g	7.45V
Minneapolis	P 75.00F	65.00F	0.41aL	75.00F	95.00F	130.00F	78.00F	2.25gF	80.00F	2.10F	80.00F	4.25F	.....
Montreal	58.00M	49.30M	37/41.50M	53.00M	64.75M	.....	58.50M	1.80M	66.00M	1.80M	66.00M	9.00qM	58.00M
New Orleans	57.00H	53.00H	45.00H	60.00H	67.00H	140.00H	80.00H	3.00L	70.00*	.....	.....	.....	62.50U
New York	65.00H	55.00H	42.50H	60.00H	78.00	134.00	78.00	1.55b	68.50b	.....	.....	4.38iH	40.00wH
Philadelphia	H 53.00	45.00	36.50	52.50	65.00	115.00	65.00	1.20	50.00	1.40	50.00	2.95	53.50
Pittsburgh	74.00K	65.00K	40.00K	63.00K	80.00K	100.00K	80.00K	1.25xK	55.00K	1.25xK	55.00K	4.25iqK	39.50K
St. Louis	55-65.00HO	50-55.00HO	40.00HO	65.00HO	70.00HO	115/120HO	75/80.00HO	125/135	65-75HO	2.00PHO	74.00HO	4.30iqHO	.....
San Francisco	60.00F	49.00F	0.36aF	61.00F	70.00F	111.00F	69.00F	1.75F	68.50F	1.75F	66.50F	5.10	60.00F
Seattle	68.00K	58.50K	51.50K	68.50K	65.00K	125.00K	71.00K	1.15xK	58.00K	1.90*pK	81.00*IKk	4.25K	46.50HK
Toronto	58.00	50.00	50.00L	67.50	79.00T	.....	88.00T	1.85	72.00	.....	72.00	15.00a	48.00

** F.o.b. warehouse. *a Semi thick. *b 30# bag. *c 3 layers of foil: $54.50. *d 40# kraft paper, 5 Msf, 100/500 rolls. *e 20# sq ft bag, 4" thick. *f Full trailer loads. *g 80# kraft paper backing 400 rolls or over. *h LCL. *i 40#. *j 80#. *k 2-in. *l 2". *m 8 to 10 ton quantities. *n Distributor's siding. *o Per Msf roll. *p 33# bag. *q 500 sf. *s 35# bag. *t 20# bag *u Flame proof $75. *v 5000 sf quantity. *w F.o.b. city. *x Sq. yd. *y 30# bag. *z Spun rock wool. *A 850 sf. *B ton. *C F.o.b. plant, freight allowed. *D CL. *E 10 Msf. *F less 2% disc, 10th. *G ½ of 1%, 10 days. *H 2% disc, 10 days. *J 1% disc, 10 days. *K less 2% for cash. *L 9% disc, 10th mo. *M fed. tax incl. *N 1% disc, 10 days. *O add 2% sales tax. *P 50 lb. bags. *Q add 4% sales tax. *R revised. *S 45 lb. *T less 2%, 30 days. *U lots of 2500 sq. ft. *V 250 sf roll.

MEXICO CITY WAGES & PRICES

WAGES, av per week, 8 hr day (pesos)a		Oct. '60
Common labor,	building (peons)	101.50
	heavy const (peons)	136.50
Skilled labor,	carpenters 1 cl	210.00
	bricklayers 1 cl	245.00
	struct. ironworkers	315.00

*a 6 days work-extra day's pay

MATERIALS PRICES, F.o.b. City (pesos)		Oct. '60
Struct. steel shapes, fob Monterey		
I-beams, 3 x 3 x 4"	per metric ton	1943.00
Reinf. steel, corrugated rods, per ton		
⅜"-⅝" x 11 meters consolidads		1950.00
¼"-1" x 11 meters		1850.00

		Oct. '60
Gravel, truckload, per cu meter		
Blue gravel		30.00
Cement, std. port. (Tolteca)	per metric ton	260-270
Lumber, 2" x 4" 1st class pine 20 ft.	per M sq. ft.	3000.00
2" x 4" 2nd class pine	per M sq. ft.	2500.00

Construction Reports

Bids Asked—Low Bidders—Contracts Awarded—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager J. A. MAHONEY, M. WETZEL, M. E. SCIORRA, MARIE MORAVSIK, ELEANOR QUERET, Reports, J. H. WEBBER, E. R. HUBER, Statistics.

NEW ENGLAND

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

November 14 Connecticut

STREETS AND ROADS

November 9 Maine November 14 Connecticut

HEAVY CONSTRUCTION—LB & CA

▲† **A. S. Wikstrom, Inc.**, P.O. Box 217, Skaneateles, N. Y., CA **$4,103,588**, est. $4,573,500, reconstr. Drydock No. 3 and deepening Berths 13B and 13C, Naval Shipyard, NBy-29605, Spec. 29605/60, PORTSMOUTH, N. H. Dist. P. Wks. Office, 1ND, 495 Summer St., Boston 10, Mass. Bids Oct. 4. CD 10/7, under LB.

▲† **Electronic Missile Facilities, Inc.**, 2 Lafayette St., New York, N.Y., LB **$2,098,184**, est. $2,083,328, addnl. facilities BOMARC 1M 99B, Otis Air Force Base, ENG-19-016-61-8, FALMOUTH, MASS. U. S. Eng., 424 Trapelo Rd., Waltham, Mass. Bids Oct. 19. CD 10/17.

▲ **RHODE ISLAND**—State R. I. & Prov. Plant Div. Purchase, Statehouse, Providence,

M. A. Gammino Constr. Co., 728 Valley St., Providence, R. I., LB **$2,094,372**, relocation Route 1 at South Kingstown and Narragansett, RHODE ISLAND, Bids Oct. 19. CD 10/3.

▲† **Franch I Constr. Co., Inc.**, 216 Webster St., Newton, Mass., LB **$2,500,000**, (16 bidders), 3 story penthouse, H-type, 197 x 417 ft. anti-submarine research bldg., underwater sound laboratory, Fort Trumbull, NEW LONDON, CONN. Dist. P. Wks. Office, Third Naval Dist., Federal Office Bldg., 90 Church St., New York, N. Y. Bids Oct. 20. CD 10/17.

BUILDINGS—LB & CA

▲ **C. A. Batson Co.**, 26 Arlington St., Brockton, Mass., CA **$2,836,598**, Mass. Federal Proj. 19R-3044, SENIOR HIGH SCHOOL and VOCATIONAL SCHOOL, ATTLEBORO, MASS. City, Sanford St., Attleboro, Mass. Bids Sept. 20, awarded Oct. 17. CD 9/26, under LB.

▲ **M. I. O'Connor, Inc.**, 694 Bridge Rd., Northampton, Mass., LB **$2,058,000**, Base Bid, Alt. 1, add **$5,500**, JUNIOR HIGH SCHOOL, WESTFIELD, MASS. City, 24 Broad St., Westfield, Mass. Bids Oct. 20. CD 9/30.

▲ **Edwin Moss & Son Inc.**, 555 Grant St., Bridgeport, Conn., CA **$3,148,500**, six buildings north DORMITORIES at Connecticut College for Women, NEW LONDON, CONN., Connecticut College for Women, Mohegan Ave., New London, Conn. Bids Oct. 4. CD 10/17, under LB.

▲ **Joseph F. Kelly Company, Inc.**, 184 Front Ave., West Haven, Conn., LB **$4,452,000**, 3 story, V-shaped High SCHOOL, Kelsey Ave., WEST HAVEN, CONN. Town Bd. Educ., 270 Main St., West Haven, Conn. Bids Oct. 21. CD 10/21.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

November 18 Pennsylvania

STREETS AND ROADS

November 15 Maryland

BUILDINGS—BA

▲ **N. Y., New York**—SCHOOL—BA 11/15—Deputy Supt. Schools, Bureau Constr., 42-15 Crescent St., 4th Floor, Long Island City, Zone 1, general contract, plumbing and drainage, heating and ventilating, electrical work and lighting fixtures P.S. 199, W. 70 St. and West End Ave., Manhattan Boro. Plans deposit $25 general, $10 mechanical trades. CD 4/4.

BUILDINGS—SLC

▲ **N. J., Totowa** — PLANT — Yardley of London, 600 Palisade Ave., Union City, soon lets contract plant off Union Blvd. $3,000,000. Edward D. Stone, 130 E. 64th St., New York, N. Y., archt. Engineers, Inc., 487 Orange St., Newark, engrs. CD 10/4.

HEAVY CONSTRUCTION—LB & CA

NEW YORK—State Dpt. P. Wks., State Office Bldg., Albany,

N. Y.—**D. W. Winkelman Co. Inc.**, P. O. Box 1366, Syracuse, N. Y., CA **$837,193**, est. $1,031,000 b. conc. 1.15 mi., misc. work 0.02 mi., RRGS comp. I beam 3 sp. 147.8 ft total, 1 plate girder bridge 164.86 ft total, Clover St., SH 294 elimination of grade crossing of New York Central RR (West Shore Branch) with Clover St. Proj. S 462-(3), Rte. 65, FARC 60-136, PSC 6015, Monroe Co.,

N. Y.—**LeChase Constr. Corp.**, 29 Saratoga Ave., Rochester 6, N. Y., CA **$695,640**, est. $742,000 c. conc. 0.45 mi., b. conc. 0.46 mi., double surf. treat. 0.23 mi. 1 bridge comp. I beam sp. 224 ft. total, Rochester-Scottsville, Pt. 2, SH 79, Ballantyne Bridge-Pittsford, Pt. 1, SH 8443 Proj. U-660(70), Rte. 252, FARC 60-137, Monroe Co.;

N. Y.—**Lane Constr. Corp.**, 965 E. Main St., Meriden, Conn., CA **$1,773,571**, est. $2,499,000 b. conc. type 1A, 9.06 mi., misc. work 0.02 mi. Malone-Duane, Pt. 2A, SH 5668 Malone-Duane, Pt. 2B, SH 8085 Duane Center-Mountain Pond, SH 9007. Rte. 30, R. C. 60-139, Franklin Co.;

N. Y.—**John Arborio, Inc.**, Box 791, Poughkeepsie, N. Y., CA **$6,019,321** est. $8,086,000, 9 in. c. conc. pavt. 6.84 mi., b. conc. 0.87 mi., FC gran mat. Type A, 0.26 mi., etc. 4 HGS comp. I beam 3 span. 118 5 ft, 2 sp. 1 189 ft., 4 sp. 179 ft., 4 sp. 181.3 ft., 1 br. welded plate girder 3 spn. 404 ft, 1 RRGS prestressed conc. beam 3 spn. 150, B. ft., Kingston-By-pass Part 2, Rte. NY 28 to Kingston-Rhinecliff Bridge Approach, Proj. FG U-395(6), Rte. 28 to 9W. FASH 60-6, SH 60-7, Ulster Co. Bids Aug. 25, Grand total $9,327,726. CD 8/26, under LB.

▲ **NEW YORK**—State Dpt. P. Wks., State Office Bldg., Albany,

N. Y.—**John C. Peterson Constr. Corp.**, 958 Church St., Baldwin, N. Y., CA **$1,918,022**, est. $2,771,000 b. conc. 1.99 mi., misc. work 0.36 mi., total 2.35 mi. Jericho Turnpike Pt. 1, Jamaica Ave., SH 1031; Jericho Turnpike Pt. 2, Jamaica Ave., SH 1940; Jericho Turnpike, SH 9020; Jericho Turnpike, Floral Park Village, SH 60-20, Proj. U-1000 (7), Nassau and Queens Counties;

N. Y.—**Mt. Vernon Contr. Corp.**, 28 W. First St., Mt. Vernon, N. Y., CA **$708,622**, est. $781,000 9 in. cem. conc. pavt. 2 at 24 ft. and var. 1.48 mi., b. conc. 0.16 mi. misc. work, 0.05 mi. New Jersey State-Line, Conyers, Pt. 1, SH 1898, New Jersey St. Line-Congers, Pt. 2, SH 8448, Proj. U-528(8), Rockland Co.;

N. Y.—**Potter-De Witt Corp.**, Pavilion, N. Y., CA **$843,881**, est. $943,000 b. conc. 602 mi., misc. work 0.05 mi. total 6.07 mi. Cheshire-McJannetts Hill, SH 639, Bristol Springs-Cheshire, Pt. 1, SH 8156, Ontario Co.;

N. Y.—**S. A. Scullen Co.**, Box 362, Waterford, N. Y., CA **$823,225**, est. $862,000 b. conc. type 1A, Blue Mountain Lake-Indian Lake Pts. 1 & 2, SH 5704. 5704A, Indian Lake-County Line SH 1100, Hamilton Co.,

N. Y.—**County Asphalt**, 129 Main St., Tarrytown, N. Y., CA **$2,164,589**, est. $2,895,000 b. conc. Type 1A, 5.79 mi., misc. work 0.02 mi., 1 hgs prestressed conc. beam 7 spans, total 370.0 ft. Int. Rte. 402, Sect. 7D-1, Miner Farm Rd. to Ridge Rd. Proj. I-87-4(8), Clinton Co. Bids Sept. 21. Grand total $6,459,339. Bids Sept. 21, awarded Oct. 17 CD 9/22 under LB.

▲ **PENNSYLVANIA**—Pa. Hy. Dpt., 506 North Office Bldg., Harrisburg,

J. **Robert Bazley, Inc.**, P. O. Box 298, Pottsville, Pa., CA **$3,204,015**, four-lane divided concrete hy., with divisor, retaining wall for roadway on two levels; widen one bridge; three new bridges; ramps and service roads, 1.89 mi., State Rte. 29 and 45, from point in Palmerton southerly, Northampton and Carbon Counties. CD 8/5.

▲ **MARYLAND**—State Rds. Comn., 300 W. Preston St., Baltimore, Zone 3, Bids opened 10/25,

Williams Constr. Co., Middle River, Md., LB **$3,993,706**, (13 bidders), road work and bridges, B 635-13-14-15-420, Baltimore Co. CD 10/11.

BUILDINGS—LB & CA

▲ **Caristo Constr. Corp.**, 26 Court St., Brooklyn 1, N. Y., LB **$1,530,000**, (3 bidders), general contract PUBLIC SCHOOL 304, Sumner Ave. between Pulaski and Hart Sts.; LB **$1,545,000**, general contract PUBLIC SCHOOL 305, Monroe St., between Marcy and Tompkins Aves.; LB **$3,060,000** combined PUBLIC SCHOOL 304 and PUBLIC SCHOOL 305, Brooklyn Boro, BROOKLYN, N. Y. Deputy Supt. Schools, Bureau Constr., 4 Floor, 42-15 Crescent St., Long Island City 1, N. Y., Bids Oct. 21. CD 10/26, under LB;

Novak & Co. Inc., 1503 East New York Ave., Brooklyn 12, N. Y., LB **$150,237**, (7 bidders) plumbing Public School 304; LB **$147,737** plumbing Public School 305; LB **$297,737** plumbing combined Public Schools 304 and 305, (Brooklyn, N. Y.);

Dierks Heating Co., 43-32 33 St., Long Island City 1, N. Y., LB **$242,650**, (4 bidders), heating and ventilating Public School 304; LB **$242,350** heating and ventilating Public School 305; LB **$483,700** heating and ventilating combined Public Schools 304 and 305 (Brooklyn, N. Y.);

Public Improvements, Inc., 356 Broadway, Brooklyn 11, N. Y., LB **$170,200**, (8 bidders), electrical work Public School 304; LB **$169,900**, electrical work Public School 305; LB **$339,700**, electrical work combined Public Schools 304 and 305 (Brooklyn, N. Y.).

▲ **Glick Constr. Corp.**, Cropsey Ave. and Bay 44 St., Brooklyn 7, N. Y., Owner Builds, **$5,000,000** two 16 story, 321-unit APARTMENTS, Contello Towers Section II, Cropsey Ave., Shore Parkway, Bay 46 and Bay 47 Sts., Bensonhurst, BROOKLYN, N. Y. Lama, Proskauer & Prober, 395 Pearl St. Brooklyn 1, N. Y., archts. Herman Scherr, 18 John St., New York, 6, N. Y. mechanical engr. Abrahams, Hertzberg & Cantor, 207 E. 37 St., New York 16, N. Y., structural engrs. CD 7/26.

▲ **First National Realty & Constr. Co., Inc.**, 630 3 Ave., New York 17, N. Y., Owner Builds, **$3,750,000**, 20 story APARTMENT, 72 St. and East River Dr., NEW YORK, N. Y. Horace Ginsbern Assocs., 205 E. 42 St., New York 17, N. Y., archts.

▲ **Frouge Constr. Corp.**, 141 North Ave., Bridgeport, Conn., CA **$10,318,512**, general contract Combination (A) Morrisania HOUSES Proj. NY 5-4BA within portion E. 169 St., Washington Ave., E. 168 St. and Park Ave. and (B) Gouverneur Morris HOUSES, Proj. NY 5-37, Section I, which includes Bldgs. 1 to 6 (inclusive) incl. Community Center, 7, 8, 9 and 10 and boiler room, E. 170 St., 3 Ave., E. 169 St. and Park Ave., Bronx Boro, NEW YORK, N. Y. City Housing Auth., 299 Broadway, New York 7, N. Y. Grand total $14,794,300. Bids Aug. 23, awarded Oct. 26. CD 9/1, under LB;

Heating Maintenance Corp. of New York, 220 E. 138 St. New York 51, N. Y., CA **$1,229,000** combination heating and ventilating for Morrisania Houses and Gouverneur Morris Houses, Bronx Boro (New York, N. Y.);

Herman H. Schwartz, Inc., 97-11 Sutphin Blvd., Jamaica 35, N. Y., CA **$930,000** combination electrical work Morrisania Houses and Gouverneur Morris Houses, Bronx Boro (New York, N. Y.);

Paramount Plumbing & Heating Corp., 336 E. 92 St., New York 28, N. Y., CA **$1,176,900** plumbing Gouverneur Morris Houses, Bronx Boro, (New York, N. Y.);

Westinghouse Elec. Corp., 40 Wall St., New York 5, N. Y., CA **$769,692** elevators Gouverneur Morris Houses, Bronx Boro (New York, N. Y.);

Endres Plumbing Corp., 31-65 29 St., Long Island City 6, N. Y., CA **$228,000** plumbing Morrisania Houses, Bronx Boro (New York, N. Y.);

Otis Elevator Co., 260 11 Ave., New York 1, N. Y., CA **$142,196** elevators, Morrisania Houses, Bronx Boro (New York, N. Y.).

▲ **Spencer White & Prentis, Inc.**, 10 E. 40 St., New York 17, N. Y., CA Total cost **$13,000,000**, fdn. and substructure for 21 story TELEPHONE EXCHANGE and OFFICE, 789-813 Tenth Ave., NEW YORK, N. Y. New York Telephone Co., 140 West St., New York 7, N. Y. Bids Sept. 26. CD 9/22.

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $53,000; other public works $88,000; industrial buildings $110,000; other buildings $400,000. Also Foreign projects of $1,000,000 and more in size of Interest to American contractors.

By Regions & Classes of Construction

(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED

New England	Middle West
Middle Atlantic	West of Mississippi
South	Far West

PROPOSED WORK

Water Supply	Public Buildings
Sewers, Waste Disposal	Mass Housing
Bridges	Commercial Buildings
Streets & Roads	Industrial Buildings
Earthwork, Waterways	Unclassified

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.
BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.
SOON LETS CONTRACT: SLC
LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.
CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.

CD dates shown are of Construction Daily Issue in which last previous report was published.
OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

†	Federal Government
▲	Project of $1,000,000 or over.
ENR	Engineering News-Record
CD	Construction Daily

For additional reports see Construction Daily.

▲ **Wilaka Constr. Co., Inc.**, 11 E. 44 St., New York 17, N. Y., CA $4,868,000 general contract West Brighton HOUSES, Proj. NY-5-40, Section 1, Henderson Ave., Broadway, Castleton Ave. and Alaska St., Richmond Boro, WEST NEW BRIGHTON, N. Y. New York City Housing Auth., 299 Broadway, New York 7, N. Y. Bids Aug. 2, awarded Oct. 26. Grand total $6,534,070. CD 8/4, under LB;
H. Sand & Co., 11 Park Pl., New York 7, N. Y., CA $522,600 heating and ventilating for West Brighton Houses (West New Brighton, N. Y.);
Herman H. Schwartz, Inc., 97-11 Sutphin Blvd., Jamaica 35, N. Y., CA $508,470 electrical work for West Brighton Houses (West New Brighton, N. Y.);
Forsythe Plumbing & Heating Corp., 234 W. 55 St., New York, N. Y., CA $580,000, plumbing for West Brighton Houses (West New Brighton, N. Y.).

▲ **Merando, Inc.**, 4098 Minnesota Ave. N. E., Wash., D. C., CA $3,163,770, West Bethesda HIGH SCHOOL, Bethesda, ROCKVILLE, MD. Montgomery County Bd. Educ., Rockville, Md. Bids Sept. 27. CD 9/8.

SOUTH

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

December 21 Virginia

STREETS AND ROADS

November 18 Kentucky November 23 Virginia
December 21 Virginia

▲† **Florida**—BA About 11/29—U. S. Eng., P.O. Box 4970, Jacksonville, Levee 67A will be about 26 mi. long, incl. continuous borrow canal on northwest side, on north side of U. S. Hy. 41, N.E. corner of Everglades National Park, northeasterly about 26 mi. to point on Levee 33 south of Pumping Station 9 south New River Canal; Levee 29, Section 3, about 10.9 mi. long, incl. continuous borrow canal, on south side, along existing Tamiami Canal, control structure 151 will be a gate, extending along north side of U. S. Hy. 41 from south end of Levee 30, westerly 10.9 mi. to junction with south end of Levee 67A site. Structure 151 is at L-67A crossing of Miami Canal. Structure in Levee 29 near the middle of Section 3. The north (just under ½) of L-67A and S-151 are in Broward Co., Central and Southern Florida Flood Control Proj., CIVENG-08-123-61-26. $4,000,000. CD 9/21.

BUILDINGS—LB & CA

▲ **Virginia Engineering Co., Inc.**, 80 29th St. Newport News, Va. CA Est. $5,640,000 7 story, 306-bed RIVERSIDE HOSPITAL, NEWPORT NEWS, VA. Riverside Hospital, 245 50th St., Newport News, Va. Fraioli-Blum-Yesseiman, 1214 Granby St. Norfolk, engrs. CD 10/7.

▲ **Stein Realty Corp.**, 2020 W. Broad St., Richmond, Va., CA Est. over $5,000,000, 560 HOUSES subdivision, West End Manor, RICHMOND, VA. Sydney Realty Corp., 2020 W. Broad St., Richmond, Va. E. Tucker Carlton, 206 E. Cary St., Richmond, Va., archt. CD 2/1.

▲ **Giant Food Properties**, 1728 L, N.W., Wash., D. C., Owner Builds, $2,500,000, SHOPPING CENTER, ROANOKE, VA. Joseph Saunders & Assoc., 3636 King St., Alexandria, Va., archts. CD 6/13.

▲ **Southern Builders, Inc.**, 495 W. 61 St., Shreveport, La., LB $3,670,000, 2 story, steel frame, brick and masonry CHURCH SHREVEPORT, LA. First Baptist Church, c/o Neild, Somdal, Smitherman, archts., 960 Jordan St., Shreveport, La. Bids Oct. 19. CD 9/21.

▲ **United Engineers & Constructors, Inc.**, 1401 Arch St., Phila., Pa., CA Est. $4,000,000, general contract STEEL PLANT addn., ASHLAND, KY. Armco Steel Corp., West Ashland St., Ashland, Ky. CD 8/11.

▲ **Whittenberg Constr. Co.**, 2214 S. Floyd St., Louisville, Ky., LB $5,218,000 (6 bidders), PHYSICS CHEMISTRY, University of Kentucky, LEXINGTON, KY. Commonwealth of Ky., Div. of Purchases, Frankfort, Ky. Bids Oct. 25. CD 9/23.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

▲ **Ill., Chicago**—FUELING SYSTEM—BA 11/9—Dpt. Purchases, City Hall, Zone 2, No. 80.85-60-120, fueling system, Chicago O'Hare Airport, Park Ridge. $4,900,000. Naess & Murphy, 224 S. Michigan Ave., Chicago, Zone 4, engrs. CD 10/21.

HEAVY CONSTRUCTION—LB & CA

▲ **ILLINOIS**—Dpt. P. Wks. & Bldgs., Div. Hys., Centennialf Bldgs., Springfield, Bids opened 10/25,
Ill.—**General Paving Co.**, 30 E. John St., Champaign, Ill., LB $2,039,384, (13 bidders), concrete pavement 4.9 mi. 4 span WF beam structure, northeast of White Heath, Piatt Co.; LB $983,485, (11 bidders), paving 3.71 mi. FA 17 east of Mattoon, Coles Co.;
Ill.—**E. T. Simonds**, Carbondale, Ill. and **J. D. Barter**, Harrisburg, Ill., LB $2,265,326 (3 bidders), paving 2.91 mi. FAI 280 ramps etc., south of Rock Island, Rock Island Co.; LB $1,118,129 (6 bidders), paving 1.62 mi. FAI 70, near intersection with Ill. Rte. 111, St. Clair and Madison Counties;
Ill.—**Charles Ind. Co.**, RR 1, Rockford, Ill., LB $1,899,882 (4 bidders) paving 2.35 mi. Rockford-by-pass, Winnebago Co. CD 10/10.

▲† **Zack Anderson & Litwack Co.**, 4600 W. 12th Pl., Chicago, Ill., LB $6,233,149, (4 bidders), air-conditioning post office, CHICAGO, ILL. General Services Admin., 219 S. Clark St., Chicago, Ill. Bids Oct. 12.

▲ **MICHIGAN**—State Hy. Dpt., 732 Mason Bldg., Lansing 26, Bids opened 10/19,
Mich.—**Pierson Contg. Co.**, 200 Eddy Bldg., Saginaw, Mich., LB $2,334,660, 6.7 mi. US 27 freeway and two structures from point south of M-61 near Harrison north to Arnold Lake Road, Clare Co.;
Mich.—**Johnson-Greene Co.**, 416 E. Huron St., Ann Arbor, Mich., LB $1,257,447, 4.8 mi. US 27 freeway and three structures north from M-76 to Grayling, Crawford Co.;
Mich.—**L. W. Edison Co.**, 5271 Plainfield N. E., Grand Rapids, Mich., LB $1,229,429, 5.3 mi. single roadway on US 27 freeway bypass of Charlotte from existing four lane US 27 M-78 highway east of city southeasterly to Duck Lake Rd., Eaton Co. CD 10/5.

BUILDINGS—LB & CA

▲ **Schurman Constr. Co.**, 75 3rd Ave. W., Huntington, W. Va., CA Est. $4,000,000, 70,000 sq. ft. styrofoam PLANT addn., HAVERHILL, O. Dow Chemical Co., Midland, Mich. CD 8/22.

▲ **Babcock & Wilcox Co.**, 20 S. Van Buren St., Barberton O., CA Est. $5,000,000, third boiler, at Bay Shore PLANT, TOLEDO, O. Toledo Edison Co., Edison Bldg. Toledo, O. CD 4/14.

▲ **E. H. Marhoefer Jr. Co.**, 2424 N. 25th Ave., Melrose Park, Ill., CA $2,600,000, 108,000 sq. ft. SCHOOL, CHICAGO, ILL. Francis Parker School, 330 W. Webster Ave., Chicago, Ill. Bids Aug. 9, awarded Oct. 18. CD 8/3.

MISSISSIPPI TO ROCKIES

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

November 9 Arkansas November 17 Kansas

STREETS AND ROADS

November 9 Arkansas November 17 Kansas

▲† **Kan., Wichita**—TITAN II, MISSILE LAUNCH COMPLEXES—BA On Or About 12/13—U. S. Eng., 1800 Federal Office Bldg., Kansas City 6, Mo., 18 launch sites to incl. complete water supply sys., open cut site excav., silo shaft excav., silo structural concrete incl. outer concrete silo lining, flame deflector and exhaust duct; structural steel roof supports, control center structural steel floor supports and shock isolation equipment, rein.-con. access portal, blast lock and connecting tunnel and access roads, Phase I, McConnell Air Force Base, ENG-04-548-61-3. Under $30,000,000. Plans deposit $10. CD 10/21.

BUILDINGS—BA

▲ **Kan., Wichita**—WICHITA PLAZA—BA 11/12—Walter W. Ahlschlager, Jr. and Preston Reynolds, Jr., 2505 Turtle Creek Blvd., Dallas 19, Tex., Wichita Plaza Proj., incl. 19 story Vickers Tower office and 9 story Lassen Terrace hotel with 450 car parking. $9,500,000. Walter W. Ahlschlager, 2505 Turtle Creek Blvd. and P.O. Box 6745, Dallas 19, Tex., archts. CD 5/6.

BUILDINGS—LB & CA

▲ **W. R. Grimshaw Constr. Co.**, Enterprise Bld., Tulsa, Okla., CA $4,500,000, 52 store SHOPPING CENTER, SAN ANTONIO, TEX. Community Realty Co., Wonderland Regional Shopping Center, 3022 E. Houston St., San Antonio, Tex. (Gerri Von Frellich, 42 Lakeside, Denver, Colo., Developer). CD 10/11.

▲ **Buck Hausmann, Builder-Developer**, 5422 Palms Center, Houston, Tex., Owner Builds, $4,500,000, 368 DWELLINGS, Bewerly Hills Subdivision, Kingsport Rd. and Gulf Freeway, HOUSTON, TEX.

▲ **Dale Bellamah**, 2810 Central Ave. S.E., Albuquerque, N. M., Owner Builds, $10,000,000, 843 HOUSES, Coronado Crest Subdivision, Lomas, Juan Tabo, the Coronado Freeway and Los Altos Park, ALBUQUERQUE, N. M.

FAR WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

November 15 Idaho

STREETS AND ROADS

November 4 Arizona November 15, 22 Idaho
November 15 Washington
November 23, 25, 30 California
December 1 California, Nevada

▲† **Wash., Spokane**—RUNWAY, etc.—BA 11/17—U. S. Eng., 1519 S. Alaskan Way, Seattle, Zone 4, runway and taxiway paving, lighting, Fairchild Air Force Base, ENG-45-108-61-46, $4,500,000. CD 10/20.

▲† **California**—BA 12/6—U. S. Eng., 1209 8 St., Sacramento, dredging Sacramento River Deep Water Ship Channel Proj. Mile 18.2 to Mile 26.8 and plugs at Mile 36.0 and Mile 41.0 nearly 19,000,000 cu. yd. excav., Yolo Co. Spec. 2494, ENG-04-167-61-27. $7,500,000. Plans deposit $10. CD 10/1/59.

HEAVY CONSTRUCTION—LB & CA

▲ **CALIFORNIA** — State Div. Hys., 1120 N St., Sacramento,
Fredrickson & Watson Constr. Co., 873 81st Ave., Oakland, Calif., CA $4,198,239 grading, paving 3.9 mi. four lane freeway approach from Solano Co. side to Benicia-Martinez Toll Bridge incl. toll facilities, Solano Co. Bids Oct. 13. CD 10/17, under LB.

▲ **F. W. Case Corp., Hood Constr. Co., Hoodnorthwest Pipeline Co. and Hood Flexible Pipe Cleaning Co.**, Municipal Airport, Chico, Calif., LB $2,982,965 (7 bidders), South Bay Aqueduct 13,000 ft. Brushy Creek pipe line, 10,000 ft. Dyer Canal, 12,000 ft. Altamont pipe line and 10,000 ft. section Livermore Valley Canal, units of Feather River Proj. and California Water Plan, Alameda Co. CALIFORNIA. State Dpt. Water Resources, 1120 N St., Sacramento, Calif. CD 5/6.

▲† **Green Constr. Co., Winston Bros. Co. and Tecon Corp.**, 20 North San Mateo Dr., San Mateo, Calif., LB $7,613,855, est. $8,260,580, rockfill New Hogan Dam, Calaveras River northeast of Stockton, Spec. 2670, ENG-04-167-61-2, CALIFORNIA. U. S. Eng., 1209 8 St., Sacramento, Calif. Bids Oct. 25. CD 8/25.

BUILDINGS—LB & CA

▲† **Barrett Constr. Co. and Theodore G. Meyers & Sons**, 1800 Evans St., San Francisco, Calif., LB $9,900,000, Base Bid, (6 bidders), Bldg. 1, G. M. & S. HOSPITAL, MARTINEZ, CALIF. Veterans Admin., Munitions Bldg., Wash., D. C. Bids Oct. 25. CD 10/19.

▲ **Robert E. McKee, Inc.**, 4701 San Fernando St., Los Angeles, Calif., CA $8,823,650, County GENERAL HOSPITAL, SAN DIEGO, CALIF. San Diego County, Rm. 306, Civic Center, San Diego 1, Calif. Bids Oct. 11, awarded Oct. 19. CD 10/13, under LB.

▲ **Secrest & Fish**, 10 West Whittier Blvd., Whittier, Calif., LB $2,623,721, (9 bidders), Friendly Hills HIGH SCHOOL, WHITTIER, CALIF. Whittier School Dist., 902 West Washington Blvd., Whittier, Calif. Bids Oct. 20. CD 9/21.

CANADA

HEAVY CONSTRUCTION—BA

▲ **Man., Winnipeg**—AIR TERMINAL—BA 11/18—Dpt. Transport, Hunter Bldg., Ottawa, Ont., air terminal, Winnipeg International Airport. $14,000,000. Plans deposit $350. Green, Blankstein, Russell & Assocs., 222 Osborne St. N., archts. CD 5/3/57.

BUILDINGS—SLC

▲ **Man., Winnipeg**—Manitoba Telephone System Telephone Bldg., Portage Ave. E., soon lets contract site work, foundations excavating for 6 story administration, Portage Ave. W. Total est. $4,000,000. Plans deposit $100. Smith, Carter, Searle & Assocs., 65 Dewdney Ave., archts. CD 4/20, under Commercial Buildings.

HEAVY CONSTRUCTION—LB & CA

▲ **Foundation Co. of Ontario Ltd.**, 1220 Bay St., Toronto 5, Ont., CA $3,745,770 (6 bidders), rein.-con., structural steel elevated structures, F. G. Gardiner Expressway, Station 257-09 to Station 267-64-39, TORONTO, ONT. Municipality of Metropolitan Toronto, 67 Adelaide St. E., Toronto, Ont. Bids Sept. 27, awarded Oct. 14. CD 10/10, under LB.

BUILDINGS—LB & CA

▲ **Managers Ltd.**, P.O. Box 398, St. John's, Newfoundland, CA Est. $5,000,000, TRADE SCHOOL, incl. four 100 x 160 ft. glass, brick SHOPS, ST. JOHN'S, NEWFOUNDLAND. Province of Newfoundland, Dpt. Educ., St. John's, Newfoundland. CD 8/24.

▲ **Anglin-Norcross Ontario Ltd.**, 224 Davenport Rd., Toronto, Ont., CA $3,460,000, HOSPITAL for mentally retarded children, incl. 1 story cottages, 2 story wings, 2 story block structure administration bldg., GODERICH, ONT. Dpt. P. Wks., Parliament Bldgs., Toronto, Ont. Bids Sept. 14, awarded Oct. 20. CD 9/22, under LB.

▲ **Hyland Constr. Ltd.**, 1549 Chatelain St., Ottawa, Ont., Owner Builds, $2,500,000, 10 story OFFICE-APARTMENT, Carling and Holland Aves., OTTAWA, ONT.

▲ **Hurley-Gregoris Constr.**, 21 Milvan Rd., Weston, Ont., LB $2,281,000, (14 bidders), 4 story, Y-shaped, steel, concrete, masonry HOME FOR AGED, Lawrence Ave. and Brimley Rd., TORONTO, ONT. Municipality of Metropolitan Toronto, 67 Adelaide St. E., Toronto, Ont. Bids Oct. 18. CD 10/11.

PUERTO RICO

BUILDINGS—LB & CA

▲ **IBEC Housing Corp.**, Box 9209, Rio Piedras, Puerto Rico, Own Forces, Est. $8,000,000, 800 HOMES, 115 acres, SAN JUAN (BAYAMON), PUERTO RICO.

LATIN AMERICA

HEAVY CONSTRUCTION—LB & CA

▲ **Intercontinental del Manabi**, c/o Intercontinental Engineering Assocs., engrs., P.O. Box 1097, Perry Annex, Whittier, Calif., U.S.A., CA Est. $80,000,000 water, sewerage, irrigation and hydroelectric sys., Manabi, ECUADOR. Province of Manabi, Portoviejo, Ecuador.

BUILDINGS—LB & CA

▲ **Intercontinental Del Manabi**, c/o Intercontinental Engineering Assocs., engrs., P.O. Box 1097, Perry Annex, Whittier, Calif., U.S.A., CA Est. $10,000,000, APARTMENTS, STORE, RACE TRACK, RECREATION AREA, MOTELS and SUMMER HOMES, QUITO, ECUADOR. Owner, c/o engineers.

PROPOSED PROJECTS

WATER SUPPLY

▲ **Calif., Agoura**—Las Virgenes Municipal Water Dist., 28320 Ventura Blvd., voted $6,000,000 bonds Oct. 11, WW imprvs. Leed, Hill & Jewett, 609 S. Grand Ave., Los Angeles, consult. engrs. CD 10/4.

▲ **Calif., Somis**—Calleguas Municipal Water Dist., 3357 Somis Rd., Box 183, voted $22,000,000 bonds Oct. 11, reservoir, $2,000,000; tunnel, $2,000,000; 55 mi. conduit from Glendale to Somis Areas, $18,000,000. Total cost $24,000,000. Perliter & Soring, 448 S. Hill St., Los Angeles, consult. engrs. CD 10/4.

▲ **N. C., Asheville**—City, City Hall, voted bonds Oct. 4, 15 mi. 36 in. water transmission line, 24 in. spur line, 500,000 gal. storage reservoir. $4,500,000.

SEWERS, WASTE DISPOSAL

▲ **Mo., North Kansas City**—City, City Hall, voted $7,443,000, bonds Oct. 11, sewer imprvs., sanitary sewers, treatment plant. CD 9/29.

BRIDGES

▲ **PENNSYLVANIA**—State Hy. Dpt., 506 North Office Bldg. Harrisburg,
Columbia Co.—Keystone Shortway bridge over Susquehanna River three miles north of Bloomsburg; 1 interchange connecting Shortway and U.S. Rte. 11 and 1 connecting with L.R. 19020; 1 railroad overpass, $8,000,000. Brookhart & Tyo, 3501 N. Front St., Harrisburg, consult. engrs. CD 5/11, under Streets and Roads.

STREETS AND ROADS

▲ **PENNSYLVANIA**—State Hy. Dpt., 506 North Office Bldg., Harrisburg,
Crawford and Mercer Counties—31.3 mi. section Erie-Pittsburgh Expressway from three mi. southeast of Mercer to two mi. west of Meadville, incl. interchange with Keystone Shortway enar Mercer, $35,000,000. Michael Baker, Inc., Baker Bldg., Rochester, consult. engr. CD 2/23.

▲ **PENNSYLVANIA**—State Hy. Dpt., 506 North Office Bldg., Harrisburg,
Monroe and Carbon Counties—16 mi. section Keystone Shortway from point east of Penna. Turnpike, Carbon Co., to north of Tannersville, Monroe Co., $12,000,000. Capitol Engineering Co., West Church St., Dillsburg, consult. engr. CD 5/11.
Luzerne and Carbon Counties—15½ mi. section Keystone Shortway from Rte. 309 near Drums to point east of Pa. Turnpike, Carbon Co., $10,000,000. Bellante & Clauss, Inc., Mears Bldg., Scranton, consult. engr.

EARTHWORK, WATERWAYS

▲ **Calif., Los Angeles**—Los Angeles Co. Flood Control Dist., 2250 Alcazar St.,
Bell Creek rein.-con. rectangular channel, Shoup to Fallbrook Aves., Canoga Park, $580,000.

Bull Creek and Bull Creek reservoir branch, Chatsworth St. to Canyon mouth and Bull Creek to Rinaldi St. rein.-con. channel, Canoga Park, $450,000.
rein.-con. invert Ballona Creek Centinella Blvd. to La Salle Ave., $1,100,000.

Dominguez Channel, Trapezoidal earth channel with rock slopes, Henry Ford Blvd. to Wilmington Blvd., Wilmington, $3,600,000.

Dominguez Channel, rein.-con. Compton Blvd. to Rosecrans Ave., Compton, $1,200,000.

Englewild Channel and debris basin, rein.-con. channel and compacted earth debris dam, Glendora, $430,000.

Limekiln Creek, rein.-con. channel, Van Alden Ave. to 1,000 ft. south of Plummer St., Northridge, $540,000.

Van Tassel Canyon Channel, San Gabriel River to Canyon mouth grouted rock reveted levees and relocate Fish Canyon Rd., Azusa, $320,000.

▲† **Michigan**—U. S. Eng., 1101 Washington Blvd., Detroit, Zone 26, First Stage, second lock, St. Marys Falls Canal, Sault St. Marie in area now occupied by Poe Lock between Davis and MacArthur Navigation Locks, CIVENG 20-064-61-19. Under $11,000,000.

▲† **Pennsylvania**—U. S. Eng., New Federal Bldg., Pittsburgh, Maxwell Locks and dam, Monongahela River. $10,000,000. Bids in November. CD 9/21.

AIRPORTS

▲ **Ill., Chicago**—AIRPORT IMPROVEMENTS—Dpt. Purchases, City Hall, Zone 2,
paving, changes in entrance road, $5,250,000.
terminal bldg., concourse, restaurants, $8,944,000.
alter terminal into International Awards Bldg., $4,030,000.
fuel system, tanks, $1,883,000.
central heating-refrigeration plant expansion, $2,985,000.
storm drainage, $2,432,000, all foregoing at Chicago-O'Hare International Airport. Naess & Murphy, 224 S. Michigan Ave., Zone 4, consult. engrs. CD 10/23/59.

UNCLASSIFIED

▲ **Tex., Austin**—FALL-OUT SHELTER—State of Texas, Capitol Bldg., 250,000 sq. ft. multi-level underground fall-out shelter, tunnel connections, $2,500,000.

PUBLIC BUILDINGS

▲ **Calif., San Mateo**—SCHOOLS—San Mateo Union High School Dist., 650 N. Delaware, voted bonds Oct. 11, schools. $3,900,000. CD 6/13.

▲ **Del., Newark**—HIGH SCHOOL—Bd. Educ., Newark, plans by E. William Martin, 830 West St., Wilmington, high school, $3,000,000.

▲ **Md., Marlboro**—SCHOOLS—Prince Georges County Bd. Educ., plans by Walton & Maddon, 3510 Rhode Island Ave., Mt. Rainier, Md., Bladensburg Junior High School addn., Bladensburg $550,000, Surrattsville High School addn. near Clinton $590,000, high school on Heurich property, Hyattsville $1,970,000; plans by Paul Kea, 5109 Baltimore Ave., Hyattsville, Md., DuVal Senior High School addn., Glendale $650,000, Kenilworth High School, Berwyn Heights $2,250,000, Mt. Rainier High School addn., Mt. Rainier, $850,000; plans by Ronald Senseman, 7705 Georgia Ave. N.W., Wash., D. C., Eastpines Junior High School, Riverdale $1,560,000, Frederick Sasser High School addn., Upper Marlboro $750,000, Greenbelt Junior High School addn., Greenbelt $500,000; plans by Harder & Dressel, Glen Burnie, Md., Piscataway Junior High School, Piscataway $1,330,000. CD 7/21.

▲ **Mich., Dearborn** — CIVIC AUDITORIUM — City, City Hall, $3,975,000 bond election Nov. 8, civic auditorium. CD 11/20.

▲ **N. J., Edison**—SCHOOLS—Bd. Educ., Twp. Edison, Old Post Rd., high school addn., $3,000,000; high school addn., $1,000,000.

▲ **N. J., Edison**—HOSPITAL—Twp. of Edison, Plainfield Ave., 250-bed hospital. $3,000,000-$4,000,000.

▲ **N. Y., Binghamton**—GENERAL HOSPITAL—City, Bd. Contract & Supply, plans by Donald Ritchie, 135 Clarendon St., Boston, Mass., general hospital addn., alterations, Park Ave. $3,000,000. Bids December 1960-January 1961. CD 2/21/56.

▲ **N. Y., Dunkirk**—SCHOOL—Dunkirk Bd. Educ., defeated bonds Oct. 10, high school. $2,500,000. CD 9/8.

▲ **N. Y., Kingston**—SCHOOLS—Bd. Educ., 403 Broadway, plans by Perkins & Will, 55 Church St., White Plains, 130,000 sq. ft. Junior High School, $2,600,000; elementary school, $1,000,000. Segner & Dalton, 55 Church St., White Plains, mechanical engrs. Garfinkel & Marenberg, 100 W. 42 St., New York, Zone 36, structural engrs.

▲ **N. Y., Wantagh**—SCHOOL—Bd. Educ., U.F.S.D. No. 23, Beltag Ave., referendum approved Oct. 15, Wantagh Junior-Senior High School addn. $2,450,000.

▲ **North Carolina**—OFFICES—State Hy. Comn., State House, Raleigh, offices. $2,800,000.

▲ **N. C., Wilson**—HOSPITAL—Bd. Comrs. Wilson Co., Courthouse, $3,206,750 bond election Nov. 8, hospital. Over $4,000,000.

▲ **O., Cincinnati** — HOUSING — Cincinnati Metropolitan Housing Auth., 595 Armory St., two-type 286 unit housing, $2,860,000. Larson, McKinney & Miller, 830 Main St., consult. engrs. Bids late 1961 or early 1962. CD 1/6/50.

▲ **Va., Portsmouth**—HOUSING—Portsmouth Redevelopment & Housing Auth., 1900 Columbus Ave., plans by Bernard B. Spigel, Kresge Bldg., Norfolk, VA-1-7, 1 and 2 story, 270 units housing proj. $3,000,000. C. Warren Bogan & Assoc., Franklin Bldg., Norfolk, consult. engrs. CD 8/26/52.

▲ **Va., Richmond**—JAIL—Dpt. P. Wks., 217 Governor St., plans by Carneal & Johnston, 602 W. Cary St., Budina & Freeman, 728 E. Main St. and Baskervil & Son, 2313 W. Cary St., jail. $3,300,000. CD 1/6.

▲ **Wyo., Casper** — SCHOOLS — Casper-Midwest School Dist., 10th and Elm Sts., bond election Dec. 6, high school, $3,600,000, Krusmark & Krusmark, 525 E. Railroad Ave., archts.; Junior High School, $1,750,000, Robert Wehrli of Architectural Guild, 829 CY Ave., archt.

COMMERCIAL BUILDINGS

▲ **Ark., Little Rock**—RESIDENTIAL COMMUNITY—Methodist Children's Home, 2002 Fillmore St., plans by Trapp, Clippard & Phelps, 713 W. 2 St., residential community for retired persons, $4,000,000.

▲ **Fla., Largo**—SHOPPING CENTER—Walsingham Plaza Inc., c/o Jehle Brothers, 1616 Mt. Meigs Rd., Montgomery, Ala., plans by Frank R. Mudano, First Federal Bldg., Clearwater, shopping center. $3,500,000.

▲ **Fla., Miami**—OFFICE, etc.—Kratter Corp., 521 5th Ave., New York, N. Y., plans by Lapidus, Kornblath, Harle & Liebman, 940 Lincoln Rd., Miami Beach, 20 story office bldg. and department store, swimming pool, Biscayne Blvd. near Flager St., DuPont Plaza Area, $6,000,000.

▲ **Fla., Mt. Dora**—SHOPPING CENTER—Sunshine State Shopping Centers, Inc. c/o Milton Pepper, 6130 6th Ave. N., St. Petersburg, plans by Robert Lee Grundman, 1120 34th St. N., 294,000 sq. ft. Golden Triangle Shopping Center, U. S. 441, bowling alley and parking area, $2,500,000.

▲ **Ill., Kankakee**—HOSPITAL—St. Mary's Hospital, 150 S. 5th St., 4 story hospital wing addn., incl. air-conditioning, north of Merchant St. Wing, $9,000,000.

▲ **N. J., Bernardsville**—HOUSES—Myron Wally, 240 Front St., Plainfield, 105 houses, Mt. Airy Rd. $3,000,000. Clarence L. Smally, Gladstone, N. J., engr.

▲ **N. J., West New York**—APARTMENT etc.—Kratter Corp., 521 5 Ave., New York, N. Y., plans by Stanley L. Horowitz, 45 Park Ave. E., Merrick, N. Y., The Tower, 28 story apartment, 6 level garage, 60 St. and Boulevard East. $6,000,000.

▲ **N. Y., New York**—OFFICE—Columbia Broadcasting System, Inc., 485 Madison Ave., plans by Eero Saarinen & Assoc., 1300 N. Woodward Ave., Birmingham, Mich., office, Ave. of Americas between W. 42 and 53 Sts. $7,000,000. Severud, Elstad & Krueger, 415 Lexington Ave., Zone 17, structural engrs. CD 7/28.

▲ **R. I., Providence**—MOTEL—Mayer Brothers, c/o Lapidus, Kornblath, Harle & Liebman, archts., 139 E. 56th St., New York 22, N. Y., 250 room Narragansett Motel, Dorrance St. $4,000,000. (Correction—architests. name). CD 10/13.

▲ **Tex., Dallas**—CONSUMERS MART—J. E. Young & Jim Costello, c/o John A. Parnell, archt., 130 Casa Linda Plaza, 1 story, 150,000 sq. ft., consumers mart, 3200 Buckner Blvd. $2,500,000.

▲ **Utah, Salt Lake City**—MODERNISTIC ARCHIVES, etc.—Church of Jesus Christ of Latter-Day Saints, 47 E. South Temple, Zone 1, plans by Harold W. Burton, supervising church architect, 47 East South Temple, Zone 1, 11 story modernistic archives of Church of Jesus Christ of Latter-day Saints. $8,000,000. Bids in 12 to 15 months.

▲ **Utah, Salt Lake City**—CHURCH OFFICE—Church of Jesus Christ of Latter-Day Saints, 47 E. South Temple, Zone 1, plans by George Cannon Young, 610 Utah Savings & Trust Bldg., 235 E. Main St., Zone 1, 38 story church office and adjacent plaza to cover 4 story underground parking for 2,000 cars, incl fountains and long reflecting pool. Harold W Burton, 47 E. South Temple, Zone 1, supervising church archt.

▲ **Utah, Salt Lake City**—HOTEL ADDN.—Church of Jesus Christ of Latter-Day Saints, 47 E. South Temple, Zone 1, plans by Harold W. Burton, 47 E. South Temple, Zone 1, Utah, 17 story 300-room Hotel Utah addn.

▲ **N. B., Moncton**—SHOPPING CENTRE, etc.—Moncton Shopping Centre Ltd., Main St. and Milner Rd., shopping centre, housing and motel, $3,000,000.

▲ **Que., Montreal**—HOSPITAL—Hopital Notre Dame de l'Esperance, 1275 Cote Vertu, plans by Duplesis, Labelle & Derome, 6655 Cote des Neiges Rd., 7 story, concrete, brick, rein.-con. hospital extension, $3,000,000. Beaulieu, Trudeau & Assocs., 6655 Darlington Ave., consult. engrs. CD 5/2.

▲ **Que., Ste. Therese**—HOUSING—Benmar Development Corp., 6484 Victoria Ave., Montreal, plans by Prof. Harold Spece-Sales, McGill University, Montreal, Ste. Therese-en-Haut Housing program, Urban-rural community, $30,000,000.

INDUSTRIAL BUILDINGS

▲ **Ga., Cedar Springs**—PULP and PAPER MILL—Southern Land, Timber & Pulp Corp., 795 Peachtree St. NE., Atlanta, pulp and paper mill, $42,000,000. J. E. Sirrine & Co., 215 S. Main St., Greenville, S. C., consult. engr. CD 6/16.

▲ **Tex., Stephenville**—PLANT—Phillips Petroleum Co., Bartlesville, Okla., natural gasoline plant, 20 mi. north of here, $3,000,000.

▲ **Va., Allisonia**—POWER PLANT—Duke Power Co., 810 S. Church St., Charlotte, N. C., steam generating power plant. Over $5,000,000.

▲ **Newfoundland, Baie Verte**—ASBESTOS ORE DEVELOPMENT, etc.—Advocate Mines, Ltd., 300 Bay St., Toronto, Ont., Canadian Johns Manville Co., Ltd., 310 Victoria St., Montreal, Que., Patino of Canada Ltd., 55 Yonge St., Toronto, Ont., Amet Corp and Financiere Belge de L'Asbest-Ciment, S.A., asbestos ore development, incl. fiber mill, crusher, dry dock storage, warehouse, service bldg., road, dock. $18,000,000. CD 10/17/58.

▲ **Ont., Odessa**—PLANT—New Mylamaque Explorations Ltd., 44 Wellington St. E., plans by Koppers Co., Inc., Koppers Block, Pittsburgh, Pa., U.S.A., Iron smelter plant. $9,000,000. R. B. Maynard & Co., 718 Wallace Ave., Pittsburgh, Pa., U.S.A., management engrs.

▲ **Ont., Port Colbourne**—MILL—Maple Leaf Milling Co., Ltd., Lake Shore Rd., flour mill. $4,000,000.

PUERTO RICO

▲ **Puerto Rico, Fajardo**—HOTEL, RESORT, etc.—Eastern Shore Development Corp., 706 Miramer Ave., Santurce, Puerto Rico, plans by Curtis & Davis Assoc. Architects and Engineers, 338 Baronne, New Orleans, La., U.S.A., 400 room hotel and resort homes, 406 acre site. $20,000,000.

LATIN AMERICA

▲ **Colombia**—Empresas Publicas de Medellin, Medellin, 500,000 kw hydroelectric plant on Nare River. $4,000,000.

▲ **El Salvador**—Comision Ejecutiva Hidroelectrica del Rio Lempa, San Salvador, 15,000 kw hydroelectric plant, Lempa River near Lake Guija. $3,000,000. Harza Engineering Co., 400 N. Madison St., Chicago, Ill., U.S.A., and Prieto y Perla Ingenieros, San Salvador, engrs.

FOREIGN

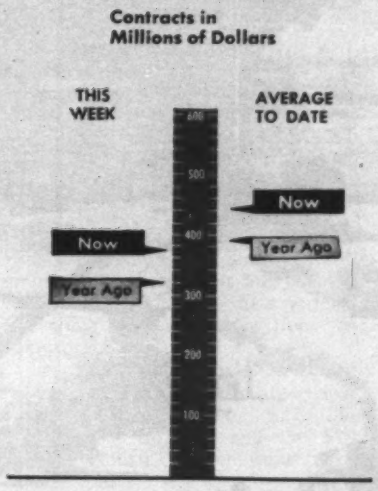
▲ **Australia**—State Electricity Comn., 447 Gregory Terrace, Brisbane, thermo-electric power station, Queensland. $112,500,000. To go ahead 1961.

▲ **Scotland, Renfrewshire**—Bd. Trade, Renfrewshire, 150 x 1,000 ft. graving dock, putting out berth, tanker cleaning installation. $12,000,000.

(Proposal Advertisements see pp. 83 to 85)

Construction Scoreboard

This Week...



AMOUNT OF CONTRACTS LET

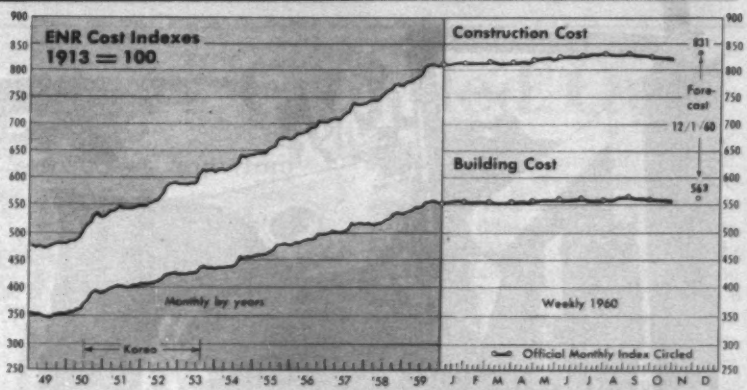
Contracts Awarded In 50 States By Type	This Week millions	Cum. 44 wks 1960	Chge '59-'60 %
All Heavy Construction	$373.4	$19,627.2	+13
By Ownership			
PRIVATE	165.2	10,603.1	+21
PUBLIC	208.2	9,024.1	+ 5
State & Municipal	167.6	7,049.1	+15
Federal	40.6	1,975.0	—19
By Type of Work			
PUBLIC			
Waterworks	4.9	390.3	+16
Sewerage	15.0	500.0	—10
Bridges*	15.8	694.5	+42
Highways	57.8	2,894.1	+15
Earthwork, Dams & Waterways	14.5	663.8	—13
Buildings:			
Excl. Housing	54.5	2,069.8	— 7
Housing	32.6	593.0	+ 8
Unclassified	13.2	1,224.1	+ 4
PRIVATE			
Buildings:			
Mass Housing	94.2	5,201.6	+32
Commercial	43.0	2,095.8	+14
Industrial	27.0	2,345.9	— 6
Unclassified	0.9	954.3	+115

*Includes Private bridges

NOTE Minimum size projects included are: Waterworks and waterways, $53,000; other public works, $88,000; industrial buildings, $110,000; other buildings, $400,000.

NEW CONSTRUCTION CAPITAL

	Week of Oct. 27 millions	Cum. 43 wks 1960	Chge '59-'60 %
Corporate Securities	$311.7	$3,137.6	— 3
State and Municipal:			
All Except Housing	122.6	5,437.3	+ 9
Housing	....	189.3	+152
Federal Loans	2.5	163.0	+34
Federal Aid	....	3,228.4	— 3
Total Nonfederal	$436.8	$12,155.6	+ 4
Federal Appropriations:			
Projects in U. S.	....	$ 3,165.6	—11
Outside U. S.	....	591.1	+610
Total New Capital	$436.8	$15,480.3	+ 1



ENR INDEXES (1913=100), 20-cities' average	Week of Oct. 27 1960	% Change from Sept. 29 1960	% Change from Oct. 29 1959
Construction Cost	829.02	—0.07	+2.38
Building Cost	560.89	—0.10	+1.21

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.850.
1949 = 100: Divide Construction Cost by 4.778; Building Cost by 3.518.

Latest Month . . .

STATE AND MUNICIPAL BOND SALES

	1960 Oct. (millions)	1960 10-Mos. (millions)	Percent Change* from 1959 Oct.	Percent Change* from 1959 10-Mos.
All Construction	$416.1	$5,600.0	+ 11.9	+11.7
Buildings	236.6	2,677.5	+ 26.5	+31.3
Schools	203.8	1,878.2	+113.2	+41.8
Housing	....	187.7	—100.0	+78.7
Other buildings	22.8	611.7	— 65.3	+ 0.3
Heavy Construction	189.5	2,922.5	+ 2.5	— 1.8
Waterworks	30.1	352.5	— 40.9	—24.0
Sewerage	20.2	318.4	+ 23.9	—11.0
Bridges	....	167.7	—100.0	+69.1
Highways	32.6	442.2	— 26.6	—11.8
Earthwork, dams, waterways	13.3	424.1	— 35.5	—42.5
Electric and gas utilities	8.4	205.0	+123.3	+86.0
Airports	4.4	80.7	+ 21.2	—55.7
Parking facilities	1.1	21.3	— 76.9	—23.0
Unclassified	79.3	910.7	+168.3	+84.0

* Based on average week: 4 weeks in Oct. '60, 5 weeks in Oct. '59; 43 weeks in first 10 months of 1960, 44 weeks in first 10 months of 1959.

CONSTRUCTION MACHINERY PRICE INDEXES

Manufacturers Prices, 1947–49 = 100 — BLS	Sep. 1960	Percent Change from last Month	Percent Change from last Year
All Types	176.7	0	+2.4
Cranes, Draglines, Shovels	173.6	0	+1.8
Shovel, ¾ cu yd	175.4	0	+0.9
Shovel, 1–1½ cu. yd	189.3	0	+2.7
Shovel, 2–2½ cu yd	170.3	0	+3.5
Crane, truck mounted	168.2	0	+1.2
Scrapers and Graders	166.6	0	+0.5
Scraper, 4 Wheel, 12–15 cu yd	156.8	0	0
Grader, heavy duty	174.1	0	+0.9
Tractors (non-farm; incl. industrial)	193.6	0	+3.1
Wheel-type, off-highway (January 1955 = 100)	129.2	0	+0.8
Crawler type, 100–154 dhp	198.2	0	+3.6
Machinery, Tractor Mounted	176.2	0	+4.5
Dozer, hydraulic control	201.9	0	+8.2
Loader, shovel type	163.2	0	+1.0
Specialized Machinery	158.7	0	+0.5
Ditcher	153.8	0	—3.4
Roller, tandem	226.4	0	+2.8
Roller, 3 wheels	178.7	0	+2.2
Portable Air Compressors	167.5	0	0
Contractors Air Tools	181.6	0	0
Mixers, Pavers, Spreaders	161.8	0	+2.9
Mixer, truck, 6 cu yd	135.1	0	+2.0
Mixer, paving, 34 cu ft	196.7	0	+1.6
Bituminous paver	165.6	0	+1.5

PAYLOAD . . . tons at a gulp on Bower Roller Bearings

They call it strip mining . . . where payload is king and "don't spare the rig". Take this scraper: aided by a rugged 'dozer, it's pushloaded in mere minutes. Then, with tons of rock and earth on its back, it takes off cross-country . . . dumps the load . . . hustles back for more.

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Houston Designers Crowded Out

- **Engineers and architects worried as important building design jobs go to outside firms.**
- **Architects start a public relations program; engineers think it may be a good idea.**

Worried about increased competition from out-of-state firms, Houston architects and engineers are beginning to suspect they have to do a better job of selling themselves to their own community.

The architects were jolted recently when design awards for two major buildings projects—the $32-million Humble Oil Building and the $100-million Cullen Center—went to an outside firm.

Engineers are concerned because one factor that may be helping outside firms land Houston contracts is their offer of combined architectural and engineering services.

As a first step in selling the home-grown architects in their home town, the Houston Chapter of American Institute of Architects has hired a public relations firm. Some engineering groups are also considering the services of professional "image builders."

Behind their concern are these impressive figures: Out-of-staters won the design work for between $225 million and $250 million worth of construction in the Houston area in the past year; that represents a minimum loss of $12 million worth of design payroll and other services. (Architects estimate that a $25-million project is worth $700,000 in payroll and other services for architects and another $500,000 for engineering firms.)

"There's no doubt about it," says Bennett Burns, president of the Houston Chapter of the Texas Society of Professional Engineers. "We need a press agent."

Mason Lockwood, of Lockwood, Andrews & Newnam, Houston consulting engineer, says, "Houston's consultants are competent to design any facility planned today." But, he says, they lose business because "outside architectural firms usually have their own engineers." Even if outside architects don't have their own engineers, they usually give the engineering part of the work to a consultant in their own locality.

The PR firm for the local AIA will develop a program aimed at convincing potential buyers of construction design that Houston architectural talent is tops. Because of concern over the ethics of this kind of professional salesmanship, the publicity push will be muted to a "soft sell"—but a "sell" nevertheless.

The public relations program is still in formative stages; $3,000 has been appropriated for a start. It will be "educational and informational," according to Karl Kamrath, president of the Houston AIA chapter.

The basic story architects will tell to the community through newspapers, radio and local displays is this:

- Houston architects and engineers are as talented and professionally qualified as those from outside the state.
- Houston and other Texas architects annually receive a good share of national and international awards for meritorious design from AIA and architectural and engineering magazines. (Since World War II, 35 Houston architectural firms have won 52 state and national AIA awards. In the same period, their designs have been cited 130 times in major architectural publications both in the U.S. and abroad.)
- Houston architects know local conditions and have amassed valuable experience in construction problems peculiar to the locality.

Among the worrisome "outside" competitors are Welton Becket & Associates of Los Angeles and Skidmore Owings & Merrill of New York City.

Welton Becket is designer for the Humble Building, now under construction, and the Cullen Center, which is expected to start early next year. Skidmore Owings & Merrill are the designers of the $20-million First City National Bank Building and the proposed $30-million Tennessee Gas Co. Building.

Welton Becket has opened an office in Houston and assigned a permanent staff. "We feel we are a part of the community because we are living and spending our money here now," a Becket spokesman says. Houston architects probably don't think it's that easy to become a Texan.

They are hardly in the mood to say "Howdy, neighbor" while cutting their own staffs in the middle of a healthy boom in buildings work.

The resort to public relations help, however, seems to be only at the AIA level.

Of 14 native architectural and engineering organizations in the city checked by ENR only one has a PR agency. The architect, Wyatt C. Gedrick, uses the Gregory Geizendanner & Co. PR firm. Newcomer Welton Becket also uses the Geizendanner agency.

Others handle the public relations chore themselves. If they obtain a big job, they call the newspapers. A few prefer to "let our work advertise our ability."

Delaware Hunting Tax Cheats

Some subcontractors are trying to beat the State of Delaware out of its just due of withheld income taxes. Those caught could find themselves in trouble up to their corporate necks with the state's tax collector.

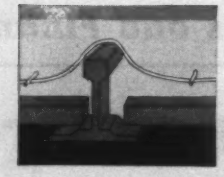
State Tax Commissioner Alex R. Abrahams says that his staff is investigating subcontractors who obtain work in Delaware, finish the job in about three months, then leave without taking out a state license or paying to the tax office the withholding taxes deducted from employees wages.

As a starter, and with the cooperation of various contractors' associations, Mr. Abraham's office is checking on a batch of out-of-state firms. Of 16 out-of-state subcontractors checked so far, six failed to obtain state licenses. These companies have been sent a copy of the state law along with a request for a check.

Mr. Abrahams also is sending a letter to all property owners planning to award construction contracts advising them that all general contractors and subs must have a license and that all employers must withhold taxes deducted from payrolls.

He is asking contractor organizations and property owners to assist him in compiling a list of out-of-state contractors bidding for work in the state so that he may effectively enforce the tax and license laws.

Another gypsum roof deck, poured in '27 and still in good shape today!



That's the kind of long and trouble-free service you can expect from a Gold Bond Poured Gypsum Roof Deck. The natural advantages of gypsum have long been recognized by leading architectural and engineering societies, which set up high standards of design for its use in roof decks. Poured gypsum decks have fireproofing qualities that give endurance ratings up to two hours; application is easy and fast (an experienced crew can pour up to 20,000 feet a day); the finished deck is light and strong.

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NATIONAL GYPSUM COMPANY, BUFFALO 13, N. Y.

Gold Bond
BUILDING PRODUCTS

a step ahead of tomorrow

Gypsum deck poured in 1927 still gives the Cincinnati Music Hall faithful service today.

Texas Small Change

U. S. puts small business tag on $4.5-million job

A storm of protest blew up in Texas last week when an Army Engineer district office set aside for exclusive bidding by small business companies two proposed construction contracts worth well over $500,000 each. One is worth an estimated $4.5 million, the other $1 million.

Contractors howled so loudly after learning of the actions that early this week the final outcome was still in doubt.

Contracts estimated to cost more than $500,000, can be set aside by the contracting officer if the local Small Business Administration representative so requests.

Few if any such actions on contracts larger than $500,000 were anticipated when instructions went out last month to field offices of the Corps and the Bureau of Yards and Docks (ENR Sept. 29, p. 19). Enterprising activity by the SBA office in Fort Worth changed that outlook, however, in the district recently taken over by Col. R. Paul West.

The Fort Worth District first shocked Southwest contractors by applying the small business restriction to bidders on a $4.5-million hospital for Sheppard Air Force Base. This project originally was advertised last month for bids November 23. But the bid date will have to be deferred until the following month because of a large addendum to the proposal.

The unavoidable delay now will allow time for reconsideration and possible withdrawal of the set-aside. Armed forces procurement regulations under which the SBA agreement is carried out would authorize such withdrawals both for the hospital and for a second project that the district has scheduled for bid opening in December.

The other project, a $1-million excavation job for the embankment and spillway of Proctor Dam, brought forth a second round of protests from contractors when they heard that it, too, would be fenced in by the small business barrier against open competitive bidding.

General contractors, both large and small, have joined in criticism of the set-asides. Specific complaints on the two Texas projects in particular, have prompted the Corps of Engineers to take a second hard look at bidding restrictions for contracts of $500,000 or more.

AGC has asked its chapters to watch for over-$500,000 set-asides in their areas.

Business in Brief . . .

• **More cement capacity**—Louisville Cement Co. will build a $10-million portland cement plant about four miles southwest of Logansport, Ind. Capacity will be more than 1 million barrels a year. Construction will start early next year.

• **Tollroad improvements**—The Pennsylvania Turnpike Commission will spend $50 million to $75 million in the next five years for modernization of the turnpike. Major projects planned include six new tunnels or bypasses, four new interchanges and additional traffic lanes, 330 miles of barrier strips and four new maintenance buildings.

• **Paper money**—Southern Land, Timber and Pulp Corp., Atlanta, will construct a $42-million pulp and paper mill at Cedar Springs, Ga. The engineering contract was awarded to J. E. Sirrine Co. of Greenville, S. C. Engineering costs during the two-year design period are expected to total about $1 million. Sirrine will have 60 men on the job at its peak point.

• **Machinery producers merge**—T. L. Smith Co., Milwaukee, has acquired L. O. Gregory Manufacturing Co. Inc., of Memphis. It will operate as a Smith subsidiary. It is a producer of baching equipment.

• **Big school**—Philadelphia will spend nearly $6 million for the construction of a 4,500-pupil high school. Frank H. Wilson, Co., Ardmore, Pa., is general contractor.

• **Museum contract coming**—Colorado will construct a $2.5-million state museum in Denver. A court decision cleared the way for the project when the judges ruled the state had the authority to condemn land for public use, even though private interests had planned construction of a 31-story building on the site in question.

• **Schools on the way**—Pennsylvania Public School Building Authority has sold $21.3 million worth of bonds to pay for school construction.

• **New capitol for Hawaii**—Two architectural firms have been selected to design a new capitol for Hawaii. The contracts went to John Carl Warnecke and Associates of San Francisco and Belt, Lemmon and Lo, Honolulu architect-engineers. The building will be located in downtown Honolulu. The design fee is $100,000.

• **Boston airport improvements**—Four passenger loading piers to cost $2 million will be constructed at Boston's Logan Airport.

Bundle of Bonds on the Ballots

A record volume of construction bond issues will be on the ballots at next week's general election.

Over $3.6 billion worth of bonds that would pay for all types of construction are proposed by nine states and 314 cities, counties, school districts and other local government bodies, according to the Daily Bond Buyer and the Investment Bankers Association.

The total is three times greater than the amount on the ballot last year, when proposals totaled $1.4 billion, and 36% more than the previous high of $2.7 million proposed in 1956.

Top issue this year is California's big, statewide water development bond issue totaling $1.75 billion (see p. 23). This accounts for nearly half the volume. It's the largest single bond issue ever placed on a state ballot, and also among the most controversial. It is not to the liking of the Los Angeles Metropolitan Water District, and is opposed by organized labor.

Here are some other important state proposals.

• Illinois—$195 million for improvements at six state-owned universities; $150 million for improvements at state welfare institutions.

• Oregon—Amendments that would result in $135 million worth of veterans' farm and home loans, $47.5 million for educational facilities, $40 million for construction at state universities.

• Kentucky—$90 million for highways; $10 million for state parks development.

• Rhode Island—$20 million for a toll bridge; $19.3 million for various purposes.

• Alaska—$39.5 million for education and a ferry system.

• New York—$75 million for state parks development.

• New Mexico—$8 million for college buildings.

• Montana—$5 million for state prison buildings.

Architects: Harrison & Abramovitz & Harris
Contractors: George A. Fuller Company and John Lowry, Inc.
Mechanical Engineer: Syska & Hennessy, Inc.
Structural Engineer: Edwards and Hjorth

To assure enduring service, steel pipe was first choice for water, waste and vent lines in the seventy million dollar Time & Life Building.

It's significant and newsworthy that **steel pipe** services vital needs in new Time & Life Building

Rockefeller Center's new 48-story Time & Life Building has over 1.5 million square feet of new, ultra-modern executive office space — serviced efficiently with *steel pipe* water, drainage and vent systems. Its electrical and communications distribution systems, too, rely on a complex of *steel conduit*.

There are good reasons for the universal use of *steel pipe* in soaring, multi-story office buildings.

1. *Steel pipe* is available everywhere in required sizes, lengths, finishes and quantities.
2. Longer lengths of *steel pipe* need less expensive fittings, less joining.
3. Rigid, load bearing *steel pipe* permits quick vertical and horizontal aligning.
4. *Steel pipe* is unsurpassed for strength, will support heavy loads, takes more abuse.

For these reasons—and others, too—*steel pipe* is the most widely used pipe for heating, plumbing, snow melting and ice making, fire prevention systems, power, gas and air transmission.

In the Time & Life Building, much of the water, drainage and vent lines required horizontal suspension. Because steel pipe was used—the lines needed less support, were quickly installed, and materials and labor costs were low.

STEEL PIPE IS FIRST CHOICE

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150 East Forty-Second Street, New York 17, New York

N. Y. Tries Joint Conference Approach

Contractors and unions hope discussions of mutual problems will promote the interests of all

The construction industry took another forward step in labor relations in New York last week when labor and management representatives from all parts of the state sat down together in the quiet atmosphere of a university campus for a three-day, frank and dispassionate discussion of labor problems.

Purpose of the joint meeting and the discussions that are to follow is to promote a better understanding of mutual problems. The minimization of strikes and jurisdictional disputes are among the goals. One management representative expressed the hope that a more satisfactory approach to many problems can be found in such discussions free from the pressures and tensions of the bargaining table.

One of the immediate results of the meeting was the formation of several joint committees to consider specific issues and problems. The committees are expected to report back to an executive committee or to the general meeting of industry representatives proposed for next year.

The meeting was held at the New York State School of Labor Relations at Cornell University in Ithaca. It was the third conference of its kind since 1958.

Representation was equally divided between management and labor. International unions were represented as well as employer associations and building trades councils.

Co-chairmen of the Cornell meeting were Jack W. Zuker and Peter J. Brennan. Mr. Zuker is vice president of the Building Trades Employers Association and president of the Schatz Painting Co., both located in New York City. Mr. Brennan is president of the New York City Building and Construction Trades Council.

"Meetings of this type may serve, in addition to their many other useful purposes, to dispel the erroneous, yet present, public conception that labor and management are not willing to work together in the construction industry," Mr. Brennan said. "These conferences have been tremendously valuable to both sides, for here we can discuss construction problems away from the heat of the bargaining table. In essence, it may well serve to cut the cost of construction through closer cooperation of both sides for the benefit of the general public."

Under the procedure adopted at the meeting the labor and management groups first met separately. Out of these meetings came some unilateral agreement on problems to be discussed and on the group approach to the problems. At the joint meetings that followed, spokesmen for the groups alternately presented the problems for discussion.

Among the topics that came up for consideration and that were referred to joint committees were:

• **Stabilization of employment.** Unions, particularly the up-state ones, are concerned about winter shutdowns and layoffs. They are hopeful that something can be done to provide a steadier rate of employment by leveling out the peaks and valleys of construction activity.

• **Apprenticeship.** Here, the problem appears to be that of achieving a better balance between the needs of the industry and the personal interests of present journeymen. It is a question of giving the industry a steady flow of skilled workers without overtraining to an extent that throws present members of the construction force out of work.

• **Travel pay.** Interest was expressed in introducing more uniformity and fairness into travel pay practices. Among the questions raised: How should zones be determined? What provision should be made for a worker who lives close to the zone line? How much should travel pay be?

Commenting on the conference, Mr. Zucker said: "All participants at the conference are of a single opinion which is that through this means we will create even closer harmony between management and labor. Each side has problems. Meetings like this, with the calibre of personnel present, enable both groups to understand the obstacles that face the other—and this works for a common solution. Our objective is to tackle the problems of the construction industry of New York State, determine how best these can be solved, and thus better serve the public's interest."

Wage Formula Proves Successful

A formula to simplify bargaining in the construction industry has reportedly been successful in an 18-county area of Pennsylvania, where the millwrights and the Keystone Building Contractors Association (AGC) in Harrisburg have been using it for the last three years.

Figures are now being compiled so that contractors will know well in advance what they can expect to pay during the year starting next May 1.

George M. Schmeltzer, executive director of KBCA, last week called the plan the "epitome of simplicity."

Under the plan, wage increases for the millwrights are based on changes in the hourly wage rates in six cities during the previous year. Twelve cities are chosen jointly by the union and contractor groups. The three at each extreme are dropped from the list, with the average of the wage changes in the remainder being used for the wage adjustment the following year.

The millwrights, who belong to the Keystone District Council of Carpenters, received a pay boost of 17.5 cents an hour under the formula on May 1 of this year, giving them a new rate of $4.00 an hour.

"Here is an automatic means of negotiating a wage agreement that is equitable," Mr. Schmeltzer said. "It's arbitrary, in a sense, but its advantages are many:

"In its application, there is no likelihood of a strike based on wages. It also eliminates lockouts. It serves the purpose of workers and employers.

"The employee can make installment purchases without fear of interrupted payments, and the employer can figure bids on jobs without the contingency of a strike. The contractor also knows well in advance what he can expect to pay in labor costs next year."

The area covered by the formula includes the entire counties of Adams, Bradford, Columbia, Cumberland, Dauphin, Juanita, Lebanon, Luzerne, Lycoming, Montour, Perry, Snyder, Sullivan, Tioga and Union, and parts of the counties of Northumberland, Wyoming and York.

"The employer may pay a few cents an hour more" under this method "but it eliminates the threat of strikes," Mr. Schmeltzer noted. He said there is a possibility that the formula may be extended to other unions.

Wanted: More Wintertime Employment

Canadian contractors would counter unemployment with more incentives for construction in winter

The relatively high unemployment that now exists in Canada is creating new interest in ways and means to increase the volume of wintertime construction work. It is argued that a faster pace of activity in construction would bolster the whole economy.

Last week the Canadian Construction Association urged the federal government to adopt a number of financial incentives, including accelerated depreciation allowances, to encourage private owners to have more of their construction work done in the winter months.

The proposals were presented at the Prime Minister's Conference on Employment in Ottawa. They were included among 14 specific anti-unemployment proposals that ranged from large-scale public works projects to tighter controls over unemployment insurance benefits.

Contrary to seasonal expectations, the rate of unemployment in Canada has climbed to 5.1%, compared to 3.6% a year ago. Most of the economic indicators point to a business recession.

The situation is particularly disturbing to the construction industry, for which the approach of winter means another cycle of traditionally high seasonal unemployment. From 30 to 40% of those on the nation's winter unemployment roles throughout the post-war period have been construction workers.

In an effort to counteract this, CCA President Jack Soules told Prime Minister John Diefenbaker that the government's Municipal Winter Works Program should be supplemented by incentives to private owners, who generate 65% of construction volume.

The government program stimulates municipal construction work by making federal and provincial grants available to help defray the cost of acceptable municipal projects undertaken in the winter months. This year, the operative period of the program has been extended to six and a half months. It went into effect October 15.

Mr. Soules suggested that tax incentives rather than grants be used in the private sector of the economy. He included these in his list of proposals:

- Accelerated depreciation allowances on privately financed construction projects built wholly, or at least partly, during the winter months. The extent of benefit would be based on wintertime payrolls.
- Treatment of certain capital expenses, such as additions to existing structures, as operating expenses if scheduled during winter months.
- Some form of compensation, or federal sales tax exemptions, for the extra expenses involved in wintertime building—such as those relating to heaters, fuels, shelters.
- A study of the possibility of incentives to manufacturers of building materials and to contractors for stockpiling materials in winter.
- Stepped up activity by the National Research Council's Building Research Division in the field of materials and techniques for wintertime construction.

Mr. Soules also suggested that the federal government reactivate its "on the shelf concept" of public works in addition to continuing large-scale public works projects that assist the basic development of the economy. Standard plans could be prepared, he said, for "short notice" use.

Labor in Brief . . .

- **No progress**—Workers have made no financial headway over the past 12 months, according to the U.S. Department of Labor. The department reports that spendable earnings of factory workers were 0.6% higher in September than they were a year ago—but the gain was wiped out by higher prices. The buying power of September earnings was 0.6% lower than a year ago.

- **Offer rejected**—Boilermakers—on strike in eastern Pennsylvania and most of Delaware for 13 weeks—have rejected by 3-to-1 an offer of a 45-cent hourly wage increase in a three-year contract. Union members have been getting $35.60 a day; they want a two-year contract gradually reducing the workday from eight to seven hours with no wage increase.

- **Union shop for engineers**—The Montana Highway Commission has approved a two-year agreement with the American Federation of State, County and Municipal Employes, AFL-CIO, covering engineering and office personnel outside the Helena headquarters and below the level of division engineers. Contract contains a union shop clause with an escape clause for employees with at least 10 years' seniority.

- **Let's study it**—Use of study committees in labor disputes found new adherents last week, when a showdown on the issue of featherbedding in the railroad industry was postponed for over a year by a labor and management agreement to submit the issue to a 15-member Presidential fact-finding commission. Ultimate recommendations will have only the influence public opinion gives them.

- **The benefit of benefits**—More than $4 billion in unemployment insurance benefits has been paid to New Yorkers since the state's jobless benefit law was enacted in 1935. Industrial Commissioner M. P. Catherwood says the law has been a "built-in safeguard for the entire economy" by bolstering purchasing power in periods of declining employment.

- **In close touch**—The executive board and general counsel of the laborers union toured by chartered bus last month local field offices of the union in the eastern three-fourths of the United States. President Joseph Moreschi said the "grass roots" visits afford an opportunity for exchanges of ideas on local problems.

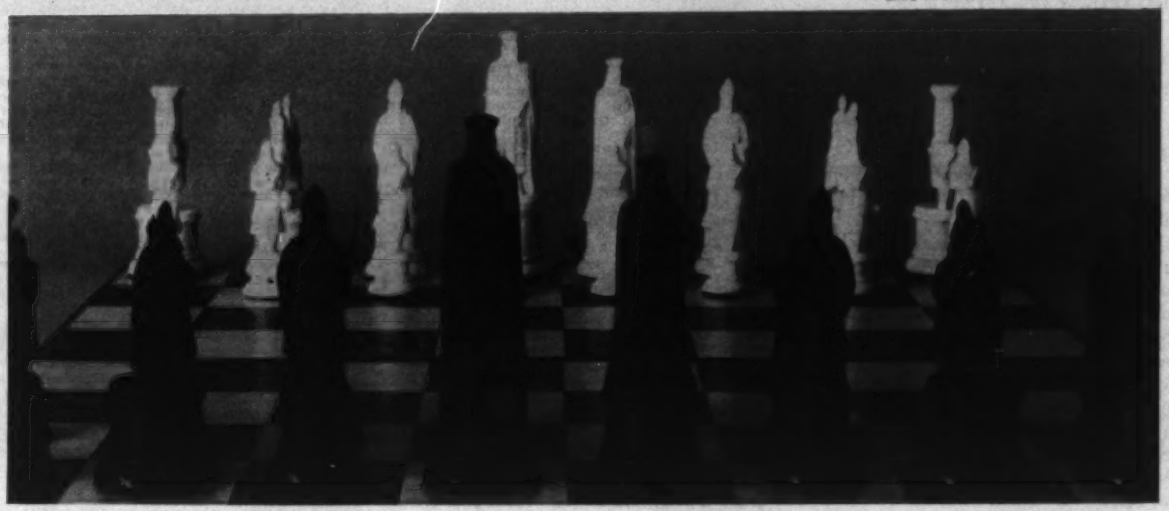
Two More Unions Charged With Election Violations

The U.S. Department of Labor has started federal court proceedings to set aside elections of officers by two more labor organizations.

That is the seventh such action against labor unions for alleged violations of the Landrum-Griffin labor law provisions on union election procedures.

Unions involved in the two new cases are a laborers local in Pittsburgh, and a nine-union group of machinists locals in Wichita, Kan. Both are accused of failure to use a secret ballot.

ERIC HARTMANN—MAGNUM PHOTOS



"ALL THAT IS NECESSARY FOR THE FORCES OF EVIL TO WIN IN THE WORLD IS FOR ENOUGH GOOD MEN TO DO NOTHING"

—EDMUND BURKE—

VOTE TUESDAY NOV. 8

This message appears here in the belief that others will also find these words of Edmund Burke a strong and timely reminder of a basic principle . . . that voting is not a right, not a privilege, but a responsibility of citizenship. Created by YOUNG & RUBICAM, INC. Advertising, New York.

Settle, Or Else!

Air Force takes stand on jurisdictional disputes

The Air Force threatens to cancel the contract of a firm that refuses to accept a jurisdictional ruling of the National Joint Board for the Settlement of Jurisdictional Disputes.

In a test of the new "get tough" drive to bring missile base construction back on schedule, Col. C. D. Barker, top troubleshooter on labor problems for the Secretary of the Air Force, last week wired an Air Force contractor at Forbes Air Force Base, Topeka, Kan., to follow a Joint Board ruling on a jurisdictional dispute between the International Brotherhood of Electrical Workers and the operating engineers—"or else."

The Forbes dispute arose soon after a subcontractor, Ets-Hokin-Galvin, under contract to the Kellogg Division of International Telephone & Telegraph Co., assigned IBEW workers to operate earthmoving machinery used in laying underground lines.

The operating engineers protested and obtained a decision in their favor from the Joint Board, but the decision was ignored. Several hundred engineers on other projects at the base then staged a one-day work stoppage. Although no pickets were posted, work was delayed.

The wire, threatening cancellation, was sent to Kellogg Division, the prime contractor. Both Kellogg Division and Ets-Hokin-Galvin had answered the operating engineers' complaint to the Joint Board. Actual cancellation of the contract—if it comes to that—would be done by the Air Force contracting officer at Oklahoma City.

Colonel Barker has made it plain that similar action would be taken in all future non-compliance situations involving contractors and subcontractors who employ men under collective bargaining agreements with the building trades unions.

Contractor sources claim that there is some doubt as to the legal basis for canceling the contract involved, but the Air Force spokesman said flatly that experts were at work on language, to be included in future contracts, that would require the contractor to comply with any industry machinery for settling jurisdictional disputes.

The Joint Board has no enforcement machinery of its own. It represents a voluntary method of settlement and relies for compliance on the good faith of those who submit to it by participating in its proceedings, by contract commitment or by stipulation.

OFFICIAL PROPOSALS

Bids: December 14, 1960

Sewage Treatment Plant
Anne Arundel County, Maryland

Notice to Contractors

Sealed proposals addressed to the Anne Arundel County Sanitary Commission, Glen Burnie, Maryland for construction of a complete sewage treatment plant for the Patuxent Sanitary District will be received by said Commission at its office in Glen Burnie, Maryland until 3:00 P.M., E.S.T., Wednesday, December 14, 1960, at which place and time they will be publicly opened and read.

The sewage treatment plant is to be located west of Md. Route 3 and County Route 424, adjacent the Little Patuxent River. The plant will be of a modified activated sludge type and will include a comminutor, an aerated grit chamber, 2—40 ft. dia. primary clarifiers, 2—72'x20' activated sludge tanks, 2—60 ft. dia. final clarifiers, a chlorinating contact tank, a sludge thickening tank, 2—26 ft. dia. heated digesters, a sludge storage tank, a blower-chlorinator building, a combined administration, sludge pumping and sludge heating building, open sludge drying beds, plant piping, a water well and distribution system, an elevated water storage tank, roads, electric service, grading, walks, planting, fence and everything else as set forth in the contract documents.

All proposals must be made upon the forms provided and must be plainly marked "Proposal on Contract No. 100-S-1B, Anne Arundel County Sanitary Commission".

Plans, specifications and other contract documents may be examined at said office and copies thereof obtained upon payment of Thirty ($30.00) Dollars for each set, which amount will not be refunded.

Each proposal must be accompanied by a certified check or bid bond acceptable to the Commission in the amount of not less than five per cent (5%) of the total bid amount.

The Commission reserves the right to reject any or all proposals and to waive technical informalities as its interest may require.

The successful bidder shall furnish a surety bond in an amount at least equal to 100% of the Contract Price as security for the faithful performance of the Contract, and a Contractor's Labor and Material Bond to insure payment for labor and materials incorporated in the work.

ANNE ARUNDEL COUNTY
SANITARY COMMISSION
W. CALVIN GRAY,
CHAIRMAN

EDWIN A. DAVAULT,
SECRETARY

Bids: November 15, 1960

Water Main Extensions
Annandale System
Project 13
Gallows Road Connecting Main

FAIRFAX COUNTY WATER AUTHORITY
ANNANDALE, VIRGINIA

Sealed proposals will be received by the Fairfax County Water Authority at the office of the Authority, 4121 Chatelain Road, Annandale, Virginia or by mail addressed to the Authority, P. O. Box 91, Annandale, Virginia, until 3:00 P. M., Eastern Standard Time, November 15, 1960, at which time they will be publicly opened at the office of the Authority and read aloud, and contracts awarded as soon thereafter as practicable for the construction of water mains in the vicinity of Annandale, Fairfax County, Virginia.

The work comprises furnishing and installing approximately 2,542 linear feet of 18-inch cast iron pipe water main, including valves and fittings and one meter and vault. Six-inch diameter pipe, fittings, valves and hydrants will be furnished by the Authority.

The Instructions to Bidders, Proposal, Agreement, form of Bid Bond, Performance Bond, Plans and Specifications for the work may be examined at the office of the Fairfax County Water Authority, 4121 Chatelain Road, Annandale, Virginia. Copies of the Plans and Contract Documents may be obtained upon the deposit of $25.00 for each set, to be refunded upon return of such set in good condition within 10 days after the opening of bids.

Each proposal must be accompanied by a bid bond or a certified check on a solvent bank or trust company, made payable to the Fairfax County Water Authority in the amount of not less than five percent of the total bid, as assurance that the bid is made in good faith.

Bidders must be registered as Contractors in the Commonwealth of Virginia, as provided by Chapter 7 of Title 54 of the Code of Virginia of 1950.

The Fairfax County Water Authority reserves the right to waive any informalities in or to reject any or all bids and to accept the bid which it deems most favorable to the interests of the Authority after all bids have been examined and canvassed.

FAIRFAX COUNTY
WATER AUTHORITY
By James J. Corballis, Jr.
Engineer-Director

Date: October 27, 1960

U. S. Government

Sealed bids for Alterations and Additions to the Museum of Natural History, Smithsonian Institution, Washington, D. C., will be received until 2:00 PM EST December 6, 1960 in Rm. 7122 GSA Regional Office Bldg., 7th & D Sts., S. W., Washington 25, D. C., and then publicly opened in Rm. 3019. Upon request, Public Buildings Service, Rm. 1308 GSA Bldg., 19th & F Sts., N. W., Washington 25, D. C. Phone: Executive 3-4900, Extn. 2397, will furnish 3 sets of drawings and specifications to each general contractor interested in bidding on the complete project, all of which must be returned. General contractors may obtain not more than 3 additional sets by depositing $150.00 for each set. Principal subcontractors, as determined by the Service, may obtain one set of drawings and specifications by making a deposit in the same amount as required by general contractors for additional sets. Deposits will be refunded for such sets if returned in good condition within 20 days after bids are opened. Checks or money orders for deposits or furnished as bid guaranty must be made payable to the General Services Administration. One set of drawings and specifications will be furnished to builders' exchanges, chambers of commerce and other similar organizations, with the understanding that the set will be retained on their premises and made available for inspection by any interested subcontractor or material firm. Commissioner of Public Buildings Service, General Services Administration.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5432) will be received at Albuquerque, New Mexico, until 10 a.m., Mountain Standard Time, December 6, 1960, for furnishing labor and materials for Channelization of the Rio Grande, Albuquerque Area, Unit 1, Middle Rio Grande Project, New Mexico. Location Isleta, New Mexico. Principal items are furnishing and erecting 8,946 structural structural steel jack units; 130 feet of ½ and 9/16-inch wire rope; 80,000 cu. yds. of excavation; and other work. Completion time 365 days. For particulars, address Bureau of Reclamation, P. O. Box 1609, Amarillo, Texas; P. O. Box 252, Albuquerque, New Mexico; or Building 53, Denver Federal Center, Denver, Colo. Floyd E. Dominy, Commissioner.

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OFFICIAL PROPOSALS

RATE: The rate for Official Proposal advertising is $2.40 per line or fraction set solid. Where the advertisement is set other than solid, the space is measured by total space occupied and charged on basis of 12 lines to the inch.

CLOSING DATE: Friday 10:30 A.M. for issue dated the following Thursday.

SEND COPY TO: Official Proposal Division, Engineering News-Record Class. Adv. Div., P. O. Box 12, N. Y. 36, N. Y.

Bids: November 17, 1960

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, and CANAL LAW, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time, on the 17 day of NOVEMBER 1960, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 1, NEWTOWN RONAN, Assistant District Engineer, 353 Broadway, Albany 1, New York						
Greene (Rte. 23 & 145)	T.S. 60-17	Cairo-Windham, Pt. 1, S.H. 5233; Cooksburg-Cairo, Pt. 3, S.H. 8413; South Cairo-Cairo, S.H. 887; Cairo Hamlet, S.H. 954	3.02 (0.62 Acc.)	Traffic Signs	$1,100 Plans $5	$19,000
DISTRICT No. 2, LACY KETCHUM, District Engineer, 109 No. Genesee Street, Utica 1, New York						
Montgomery (Rte. 10)	R.C. 60-181	Canajoharie-Sharon Springs, Pt. 2, S.H. 347	0.92	Asphalt Conc.=0.92 Mi.; Prestressed, Conc. Bridge 2 Spans 116′ Total	$16,000 Plans $5	291,000
Oneida (Rte. 5 & 12)	FAC 60-25 FASH 60-12	City of Utica: North-South Art. Highway (South City Line to Oriskany Street West) Seneca Turnpike-Utica So. City Line Proj. U-UG-752(8), U-752(8)	4.37 (8.54 Acc.)	Asphalt Conc. Type 2A 3 H.G.S. Comp. I-Beam 4 Spa., 222.55′ Total; 4 Spa., 227.0′ Total; 3 Spa., 159.91′ Total; 1 Bridge Comp. I-Beam 2 Spa., 124.56′ Total; 2 RRGS Comp. I-Beam 1 Sp., 96.75′; 3 Spa., 246.84′ Total. Viaduct-Comp. I-Beam 19 Spa.; 1260.5′ Total	$550,000 Plans $10	10,145,000
DISTRICT No. 3, EARL E. TOWLSON, District Engineer, 333 E. Washington Street, Syracuse, New York						
Onondaga (Int. Tr. Rtes. 81 & 690)	FIRC 60-178 FIC 60-22 FIC 60-23	Interstate Route 505 (Oswego Boulevard, FAC 54-3) (Syracuse-Mattydale, FASH 54-3) Interstate Route Conn. 570 (State Fair Boulevard, FAC 54-16) (North west Arterial Conn. FASH 54-5) Proj. I-81-2(43)84, I-690-3(7)208	10.5	Fencing and Miscellaneous Work	$11,000 Plans $5	197,000
DISTRICT No. 4, B. F. PERRY, District Engineer, Barge Canal Terminal, Rochester 1, New York						
Genesee (Rte. 5 & 33)	FATS 60-16	Batavia City: Main Street Arterial Highway, FAC 49-2, FAC 50-15. Proj. U-706(5)	1.54	Traffic Signs and Signals	$2,100 Plans $5	$39,000
Monroe	M 60-12	Bridges E-142, E-179, E-183 and E-184 Over Erie Canal	....	Cleaning & Painting 4 Bridges	$600 Plans $5	11,000
DISTRICT No. 5, E. G. H. YOUNGMANN, District Engineer, State Office Bldg., 65 Court Street, Buffalo 2, N. Y.						
Cattaraugus (Rte. 242)	R.C. 60-179	Salamanca-Little Valley, Pt. 2, S.H. 5259; Little Valley-Randolph, Pts. 1 & 2, S.H. 8149	4.26	Asphalt Concrete=4.22 Mi. Misc. Work=0.04 Mi.	$45,000 Plans $5	764,000
Chautauqua (Rte. 17)	R.C. 60-180	Falconer-Kennedy, S.H. 698 Levant-Poland Center, S.H. 5053	1.25 (0.37 Acc.)	9″ Cement Conc. Pvt.=1.21 Mi.; Asphalt Conc.=0.37 Mi. Misc. Work=0.04 Mi.	$29,000 Plans $5	534,000
Erie	C 60-2	City of Buffalo: Kensington Expressway Art. Highway Sect. 1—Contract III (East Tupper St. to East Utica Street)	1.91 (2.07 Acc.)	Asphalt Conc. Type 2A=3.94 Mi. Misc. Work=0.04 Mi.	$145,000 Plans $5	2,625,000
DISTRICT No. 6, WM. J. DENNIS, District Engineer, State Office Bldg., 30 West Main Street, Hornell, New York						
Allegany	FASS 60-17	Hillcrest Road, C.R. 49 Proj. S-254(1)	0.18	Asphalt Conc.=0.17 Mi.; Misc. Work=0.01 Mi. Comp. I-Beam Bridge 2 Spa. 107′ Total	$7,000 Plans $5	128,000
DISTRICT No. 7, R. W. SWEET, District Engineer, 444 Van Duzee Street, Watertown, New York						
Jefferson (Int. Trg. Rte. 81)	FITS 60-19	Interstate Rte. 505, Sect. 7AB-2, FISH 59-16 (Pierrepont Manor to Adams) Interstate Rte. 505, Sect. 7AB-3, FISH 57-21 (Adams-Adams Center) Proj. I-81-3(19)	7.08 (2.36 Acc.)	Traffic Signs	$1,000 Plans $5	17,000
DISTRICT No. 8, KURT G. RAUER, District Engineer, Pleasant Valley Rd., Poughkeepsie, New York						
Rockland	R.C. 60-183	Pearl River-Nanuet, S.H. 9006	0.46	Asphalt Concrete	$6,000 Plans $5	110,000
Westchester (Rtes. 22 & 35)	R.C. 60-182	Bedford-Goldens Bridge, S.H. 5298A Katonah-Cross River, S.H. 9251	2.25 (0.52 Acc.)	9″ Cem. Conc. Pvt.=1.92 Mi.; Grading=0.33 Mi.; Access=0.25 Mi. Cem. Conc. Pavt. 0.27 Mi. Asph. Conc. Pavt. Bridge, Comp. Plate Gird. 1 Sp., 102.5′	$50,000 Plans $5	930,000
DISTRICT No. 9, JOSEPH C. FREDERICK, District Engineer, 71 Frederick Street, Binghamton, New York						
Broome (Rte. 17)	T.S. 60-18	Windsor-Deposit, S.H. 5338; Binghamton-Windsor, Pt. 4, S.H. 5241; Binghamton-Windsor, Pt. 3, S.H. 5148; Windsor Village: Main St., S.H. 1239	6.31 (2.70 Acc.)	Traffic Signs and Delineators	$1,100 Plans $5	19,000
DISTRICT No. 10, AUSTIN M. SARR, District Engineer, 325 W. Main Street, Babylon, L. I., New York						
Bronx (Int. Trg. Rte. 87)	FIMDETS 60-1	Interstate Route Conn. 512 Major Deegan Expressway, Cont. 3 (Park Ave. to St. Ann's Avenue) Proj. I-87-1(4)	1.05	Traffic Signs Delineators Traffic Signals	$5,000 Plans $5	85,000
Nassau	LP 60-1 M8P 60-1 W8P 60-2	Loop Parkway Meadowbrook State Parkway Wantagh State Parkway	....	Repairs and Misc. Work at 9 Bridges	$21,000 Plans $5	390,000

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal-Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage), Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

If the deposit is $10.00 or more, full refund for one copy of the plans and specifications will be made to a bidder for the particular project, if such plans and specifications are returned in good condition within 30 days after the award of the contract or after the rejection of the proposal. The successful bidder is not required to return the copy of the plans and specifications in order to be entitled to such refund. If the deposit is $10.00 or more, partial refund will be made for the return of all other copies of plans and specifications in good condition within 30 days after the award of the contract or the rejection of the proposal.

Special attention of bidders is called to "Information for Bidders" in the Public Works Specifications, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as Amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bond shall conform to the provisions of the Highway Laws, as set forth in "Information for Bidders".

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPT. OF PUBLIC WORKS

OFFICIAL PROPOSALS

Bids: December 1, 1960

New Jersey Turnpike Authority

CONTRACT NO. R-77

Proposals are invited for Contract No. R-77 which involves grading, drainage, paving, structures and incidental work in connection with improvements at the Carteret Interchange in Middlesex and Union Counties, New Jersey.

The principal items of work include:

Roadway Excavation	61,600 C. Y.
Muck Excavation	9,500 C. Y.
Borrow Excavation	288,000 C. Y.
Reinforced Concrete Storm Drains	7,400 L. F.
Corrugated Metal Storm Drains	680 L. F.
Asphaltic Concrete Pavements	44,500 S. Y.
Concrete Curbs	18,500 S. Y.
Concrete in Bridges	5,900 C. Y.
Reinforcement Steel in Bridges	736,500 Lbs.
Structural Steel	2,677,800 Lbs.
Bridge Railing	2,600 L. F.
Guard Rail	6,300 L. F.
Chain Link Fences	6,100 L. F.
Electrical Metal Conduit	5,300 L. F.
Topsoiling and Seeding	93,800 S. Y.
New Toll Plaza	Lump Sum

Proposals will be received at the New Jersey Turnpike Authority Administration Building, New Brunswick, New Jersey, until 11:00 o'clock, Eastern Standard Time, on the morning of December 1, 1960, at which time and place said proposals will be publicly opened and read.

Contract documents may be examined during office hours on or after November 2, 1960, at the office of the Authority, and will be furnished upon payment of Fifteen Dollars ($15.00) for each set, not refundable.

NEW JERSEY TURNPIKE AUTHORITY
Joseph Morecraft, Jr., Chairman

October 28, 1960

Bids: January 17, 1961

Government of Ghana Volta River Project

Invitation for Tenders—Contract No. A-3 Akosombo Development: Construction of Dams, Power Plant and Appurtenances. Description of Project. The Initial Development of the Volta River Project at Akosombo will include a rockfill dam with a maximum height of about 370 feet and volume of about 10,900,000 cubic yards; a rockfill saddle dam with a maximum height of about 120 feet and a volume of about 750,000 cubic yards; an intake structure and six 24-foot diameter penstocks; a 213 ft. rated head power plant with an installed capacity of four Francis-turbine driven 128 megawatt generating units with provision for the future addition of two similar units; a spillway with 12-42x42 ft. tainter gates; a 25-foot diameter diversion tunnel approximately 1,000 feet long; and other appurtenances.

Proposed Contract. Work under Contract No. A-3 will include the construction of the above-mentioned structures, as well as the installation of generating plant and other major equipment furnished by the owner.

Site Information. The proposed development is to be located at Akosombo, about 60 miles northeast of the capital city of Accra. The job site is accessible by first-class all-weather roads from both Accra and the harbour of Tema, where heavy lift facilities for unloading and handling of equipment may be installed by the Contractor. Foundation investigations and preparatory construction of housing, warehousing, and other facilities are presently under way. The main dam and other appurtenant structures, including the spillway, saddle dam and intake, are to be ready to begin storage of water by July 1964, and the first generating unit is to be ready for commercial operation by September, 1965.

Bidding Procedure. Interested firms which have satisfactorily completed comparable projects should apply to the Consulting Engineers for the Government of Ghana:

Kaiser Engineers and Constructors, Inc. (Volta Project), Kaiser Center/300 Lake Side Drive/Oakland 12/California or Kaiser Engineers and Constructors, Inc. (Volta Project), P.O. Box 1974/Accra, Ghana,

for copies of the contract documents; two sets of documents may be obtained by making a non-refundable payment of $50 or £G17.-17.6d. Additional sets may be obtained at $25 or £G8.18.9d each.

Pre-qualification forms will be enclosed with the documents. Pre-qualification forms may also be obtained directly from the Consulting Engineers at Oakland, California. Bids will be received only from those contractors who, having submitted the full information required for pre-qualification, are subsequently selected by the Government. The determination of the Government shall be final.

Completed pre-qualification forms must be submitted by interested tenderers to the Consulting Engineers at Oakland, California, not later than 8th November, 1960. Tenderers will be invited to visit the proposed site on the 20th to the 22nd November, 1960, and view foundation exploration, including adits, shafts, trenches and cores from bore holes. This visit will include examination of Tema Harbour facilities and the Akosombo access road. Prospective tenderers should notify the Consulting Engineers before 14th November, 1960, the names of persons desiring to attend, so that hotel reservations and other arrangements may be completed. Prospective visitors should obtain passport visas and yellow fever immunisation at least two weeks in advance.

A pre-bid meeting is planned at the Office of the Consulting Engineers in Zurich, Switzerland, on December 6th, 1960, at which time additional information on foundation exploration will be made available, and staff of the Consulting Engineers will be available to answer questions by tenderers. A written addendum will be issued to all tenderers following this meeting.

Bids for Contract No. A-3 will be invited on a fixed unit price basis as set forth in the Contract Documents. It is anticipated that bids will be opened on about 17th January, 1961, and the award of the Contract will be made in about April, 1961. Preliminary security of £G250,000 will be required with tenders.

Bids: December 20, 1960

Baby Creek Enclosure Industrial to Vernor Department of Public Works City of Detroit, Michigan

CONTRACT PW-3074

Sealed proposals for enclosing Baby Creek will be received at the Office of the City Engineer, 528 City-County Building, Detroit 26, Michigan, until 2:00 P.M., Detroit time, December 20, 1960, and then at such place and time publicly opened and read aloud.

The work consists of building 4,072 lineal feet of reinforced concrete sewer structures and several small sewer pipe connections to the new sewer. The footage consists of approximately 4,014 feet of 14'-6" by 17'-6" three-barrel box, approximately 434 feet being on piles; and, continuous therewith, approximately 33 feet of 14'-6" by 17'-6" two-barrel box on piles; and the remaining footage consists of two transition structures. All of the work is to be accomplished in tight-sheeted and braced open-cut excavations, of which 3,200 lineal feet of main sewer will be required to have steel sheet piling left in place.

The Bidding Documents which must be used in submitting a proposal may be examined at the Office of the City Engineer during regular business hours, and copies may be obtained upon deposit of $25.00 per set, which deposit will be refunded upon the return of the Bidding Documents in good condition within 10 days after the date for opening bids or if used in submitting a proposal.

Each proposal must be accompanied by a certified check, bank draft, or a satisfactory surety bid bond in an amount not less than 5 percent of the total bid price as guarantee and security for the acceptance of the Contract.

Checks shall be made payable to the Treasurer, City of Detroit.

No proposal once submitted may be withdrawn for at least 45 days after the actual opening of the bids. The City of Detroit reserves the right to waive any irregularity in any bid, or to reject any or all bids, should it be deemed for its best interest.

CITY OF DETROIT
GLENN C. RICHARDS
Commissioner of Public Works

M. F. WAGNITZ
City Engineer

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5427) will be received at Dutch John, Utah, until 2 p.m., Mountain Standard Time, December 6, 1960, for furnishing labor and materials for Flaming Gorge-Vernal 138-Kilovolt Transmission Line, Transmission Division, Utah, Colorado River Storage Project. Location Daggett and Uintah Counties, Utah. Principal items are 320 structures—furnishing and constructing various types of wood pole structures and maximum pole lengths; 41 miles of line—furnishing and stringing three 477,000 circular mil ACSR conductors; and other work. Completion time 270 days. For particulars, address Bureau of Reclamation, P. O. Box 360, Salt Lake City 10, Utah; Dutch John, Utah; or Building 53, Denver Federal Center, Denver 25, Colorado. Floyd E. Dominy, Commissioner.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5431) will be received at Huron, South Dakota, until 10 a.m., Central Standard Time, December 7, 1960, for furnishing labor and materials for Steel Towers for Single-Circuit Transmission Line Approaches to Oahe and Fort Randall Switchyards, Transmission Division, South Dakota, Missouri River Basin Project. Location in Hughes, Charles Mix, and Gregory Counties, South Dakota. Principal items are 2,020 cu. yds. excavation; 68,500 lbs., furnishing and placing reinforcement bars; 500 cu. yds. concrete in tower footings; 1,102,000 lbs., furnishing and erecting steel towers; and other work. Completion time 420 days. For particulars, address Bureau of Reclamation, P. O. Box 2553, Billings, Montana; P. O. Box 825, Huron, South Dakota; or Building 53, Denver Federal Center, Denver 25, Colorado. Floyd E. Dominy, Commissioner.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5428) will be received at Phoenix, Arizona, until 10 a.m., Mountain Standard Time, December 15, 1960, for furnishing labor and materials for Six Residences for Government Camp at Davis Dam, Parker-Davis Project, Arizona. Location 30 miles west of Kingman, Arizona. Principal items are Lump Sum—Constructing six residences, complete; and other work. Completion time 170 days. For particulars, address Bureau of Reclamation, P. O. Box 427, Boulder City, Nevada; P. O. Box 392, Phoenix, Arizona; or Building 53, Denver Federal Center, Denver 25, Colorado. Floyd E. Dominy, Commissioner.

CONTRACTORS
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Official Proposals Division

ENGINEERING NEWS-RECORD

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NEW YORK 36, N. Y.

OFFICIAL PROPOSALS

Bids: December 8, 1960

George Washington Bridge Lower Level Expansion New Jersey Approach Phase 6

THE PORT OF NEW YORK AUTHORITY
CONTRACT GWB-190.029

Sealed proposals for the performance of alterations to the George Washington Bridge Toll Plaza at the connection between the Bridge and the Palisades Interstate Parkway in the Borough of Fort Lee, New Jersey, will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Thursday, December 8, 1960, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the Office of the Assistant Chief Engineer for Design of the Authority, Room 1115. Documents will be furnished upon deposit of $50.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $50.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract directly to the Authority will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
S. Sloan Colt, Chairman

New York, November 3, 1960

Bids: December 7, 1960

Pittsfield, Massachusetts Sewer Commission

INVITATION FOR BIDS

Sealed bids for the General Contract for constructing Sewage Treatment Facilities will be received by the Sewer Commission hereinafter referred to as the Awarding Authority in the office of the Commissioner of Public Works, 33 Pearl Street, Pittsfield, Massachusetts until 2:00 PM, EST, Wednesday, December 7, 1960. Immediately thereafter the sealed proposals will be taken by the Awarding Authority to the District Court Room of the Central Berkshire County Court House, Wendall Avenue, Pittsfield, Massachusetts, where they will be publicly opened and read aloud. Any bid received after the time and date specified will not be considered.

The work consists of constructing complete with equipment (1) a structure housing grit removal, screening, pumping, and power facilities; (2) sludge digestion tanks and connecting structure; and (3) mixing, flocculation and sedimentation basins. Work also includes the remodeling of the existing Administration Building for office and laboratory facilities; constructing a new garage; miscellaneous yard piping and structures; access roads; and other miscellaneous items of work. Alternates are included in the proposal for eliminating certain items of the work depending on the availability of funds.

Each General Bid must be accompanied by a certified check in the amount of $50,000 payable to the City of Pittsfield, Massachusetts. This check will be subject to the conditions provided for in the "Information for Bidders." All checks, except those of the three lowest responsible and eligible bidders, will be returned within five days, Saturdays, Sundays, and holidays excluded, after the opening of proposals. All bid deposits will be returned on the execution of the contract, or if no award is made, within sixty days after opening of bids, unless forfeited under the conditions stipulated in the "Information for Bidders."

No bidder may withdraw his bid for a period of thirty (30) days after the date that approval of award is made by the Federal Government.

The minimum wage rates to be paid by the Contractor on this work shall be determined by the Massachusetts Department of Labor and Industries. A copy of the schedule of wage rates is included in the contract documents.

The successful bidder must furnish a 100% Performance Bond and a 100% Labor and Materials Bond with a surety company satisfactory to the City of Pittsfield.

All sub-bids for a sub-trade designated in Part 2 of the General Bid Form shall be filed with the Awarding Authority at the office of the Commissioner of Public Works, 33 Pearl Street, Pittsfield, Massachusetts, before 2:00 PM, EST, Wednesday November 30, 1960. Immediately thereafter the sealed proposals will be taken by the Awarding Authority to the District Court Room of the Central Berkshire County Court House, Wendall Avenue, Pittsfield, Massachusetts, where they will be publicly opened and read aloud. Any bid received after the time and date specified will not be considered.

Each sub-bid must be accompanied by a certified check in the amount following:

Sub-bidder	Amount of Certified Check
1. Dampproofing, Waterproofing, and Caulking	$1,200
2. Miscellaneous & Ornamental Metal	2,000
3. Roofing & Flashing	1,000
4. Tile	800
5. Acoustic Tile	100
6. Glass & Glazing	150
7. Painting	600
8. Mechanical Piping and Equipment	5,300
9. Plumbing	1,250
10. Heating, Ventilating & Air Conditioning	3,250
11. Electrical	9,500

Complete instructions for filing, both general and sub-bids are included in the Information for Bidders section of the specifications.

Plans, specifications, and other contract documents may be obtained at the Office of the Consulting Engineers, Camp, Dresser & McKee, 18 Tremont Street, Boston 8, Massachusetts. A deposit of $75.00 in cash or a certified check payable to the City of Pittsfield will be required for each set of plans and specifications. The full amount of the deposit will be returned only to each actual bidder (including sub-bidders) upon the return of all documents in good condition within two weeks after the opening of bids. Contractors failing to submit a bid after taking out the plans and specifications will forfeit this deposit to the City of Pittsfield.

Contractors will be furnished one set of plans and specifications for bidding purposes. If an additional set of plans and specifications is requested, the Contractor must pay for the cost of printing same.

Equipment manufacturers may request from the Consulting Engineers portions of the plans and specifications pertaining to specific pieces of equipment. A deposit of $10.00 will be required for a separate copy of each Division of the specifications and the Contract Drawings pertaining thereto. Said deposits will not be refunded.

Plans are available for examination at the offices of F. W. Dodge Corp and Gainey's Construction Newsletter, Boston; at the office of the Consulting Engineers; and at the office of the Commissioner of Public Works, Pittsfield, Massachusetts. The City reserves the right to waive any informality in or to reject any or all proposals, or to accept any bid if deemed to be in the best interests of the City to do so. A proposal which includes for any item a bid which is abnormally low or high may be rejected as unbalanced.

SEWER COMMISSION
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Director of Specifications Department. Large Midwest consulting firm has immediate opening for capable individual with broad experience in specification writing for all branches of building construction work. Must also possess administrative ability. Send complete resume of educational background and experience, including personal qualifications and small photograph to P-5347, Engineering News-Record.

Surveyor-Draftsman for Chicago Office. Must be fully qualified for drafting, computing, checking land surveys. Age, 40-55 preferred. Salary open. Furnish samples of drafting and computing in first reply. P-5417, Engineering News-Record.

Concrete Engineer, with several years of experience in concrete and concreting materials, with some experience desirable in the precast concrete industry. Location-New Jersey. P-5488, Engineering News-Record.

Construction Engineer—Experienced, Competent. Familiar with Design of Falsework, Erection Equipment. Steel Erection Procedures, Structural Steel Detailing, and Job Organization. Wanted by Large Eastern Fabricator and Erector. P-5499, Engineering News-Record.

Assistant City Engineer. Age 28-40. Must have degree in Civil Engineering and five years experience in Municipal work. Salary depending on qualifications. $7200-$8000. Contact H. F. Beisner, City Engineer, Cedar Falls, Iowa.

POSITIONS VACANT

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Engineers—Structural Steel Sales Promotion. We are searching for Civil or Architectural engineers, preferable age 35 to 45, to handle technical and promotional work with customers of the structural steel fabricating industry. Headquarters will be in regional offices at New York City, Philadelphia, Washington, D. C., Columbus, Ohio, Chicago, Minneapolis, Omaha, and Los Angeles. Applicants should hold a B.S. in C.E. or A.E. and preferably be registered. Experience in bridge and building design, and construction in both steel and concrete required. Experience in sales and promotion work desirable. Salary open depending on experience. Insurance and retirement plans available. Send complete resume, recent photo if available, and salary requirements by mail to American Institute of Steel Construction, Inc., 101 Park Avenue, New York 17, New York. All applications will be acknowledged.

Chief Estimator—Experienced in all phases of highway construction, capable of assuming full responsibility of bid preparation and administration after award. Home office of large progressive general contractor located in Central Ohio. P-5563, Engineering News-Record.

(Continued on page 88)

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P-5245, Engineering News-Record
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P-5432, Engineering News-Record
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• POSITIONS VACANT
(Continued from page 86)

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• POSITIONS WANTED

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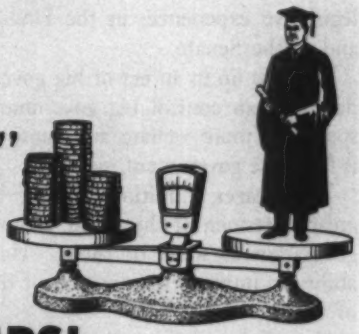

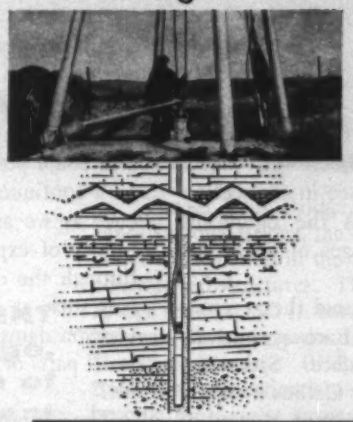

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D-33E	6"	5-10	5-20	5-40	28	56	2400	180
D-47E	6"	5-10	5-20	5-40	34	72	2000	140
G-70E	6"	5-10	5-20	5-40	42	100	1800	100
G-120	6"	5-10	5-30	5-40	93	158	1100	60
G-160	6"	5-10	5-30	5-40	86	186	900	60
I-200	8"	7½	7½-30	7½-40	80	272	800	80
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Editorials

Our Next President

THIS IS NOT AN ENDORSEMENT. It is not ENR's practice to endorse candidates. This is a description of the still unnamed next President of the United States.

He will be a young man, in his forties.

Although a World War II veteran, a naval officer, he will come to the Presidency with his reputation yet to make, unlike President Eisenhower who entered the White House with a place in history already assured.

The next President is a professional politician, rather than a war hero or a business executive. He has vast legislative experience, in the House of Representatives and in the Senate.

He grew up in an era of big government, and is confident he can control big government. He is for more spending, more welfare and more federal activity. He is for more government, not less.

He is eager, ambitious to take his place among the great statesmen of the world, although not of the same generation as some of them. He is confident of his ability to improve the position of the U. S. in the affairs of the world.

He will be all these things—and more. It's only the "more" that remains in question. And only those who go to the polls Tuesday can answer that question.

Manners and Morals

PAYOLA is a word we'd rather leave to the television industry. Payola, graft, conspiracy, bribery—all pretty harsh words, words we'd like never to see in connection with construction. But all are words the significant news of this industry put into the pages of ENR last week.

"Shocking, revolting and sickening," said the governor of Florida of a situation involving a contracting company and state highway engineers in his state. Sickening, indeed. If it was sickening to Governor Collins it should have been doubly so to those in construction to read of the admitted payola situation in Florida as well as a conflict of interest matter in Massachusetts and fines for bribery in the State of Washington.

In the face of this kind of news there is no denying that construction has more than its share of malpractice and corruption. For the amount of wrongdoing that comes to light is like the bit of the iceberg above the surface compared to the greater portion never seen. It would be well for this industry to admit that there is far more wrong with its manners and morals than the few local situations that made news last week.

Sickening as is the feeling of guilt that may be shared by all in construction for the individuals and companies involved in these cases, it should be realized that in every such case brought to light there is chance for righting a wrong. It is heartening, in fact, to consider that the conscience of the industry might be stirred by such reports of wrongdoings. And the odds against their repetition might be made just a little bit higher.

This is not a Pollyanna-ish promise or a plea that human nature can be perfected—or even changed appreciably. But the rules that we live by and work by can be impressed upon our minds as we make mistakes or see the errors of others. We may, in fact, learn more clearly and forcibly from mistakes than from shining examples. Just as in its every structural failure the construction industry seeks to learn what physical law it broke or failed to understand, the human failures that occur can be good in their net effect on the spirit of this industry.

Sickening as stories of payola may be and disheartening as may be the realization that more payola exists than breaks as news, it is not enough to feel guilt. The situation calls for admission of its existence and for a firm determination to change it.

Public and Private Engineering

THE GREAT DEBATE over which does better engineering more economically—the private firm or the government agency—goes on. A recent spokesman on the side of engineering by government agencies was Reclamation Commissioner Floyd E. Dominy, speaking at a meeting of the National Society of Professional Engineers. Talking primarily in defense of the Bureau of Reclamation, he said: "For obvious economic reasons no one private firm could possess, nor could it expect to make available on a continuous basis, such depth and variety of experience as we are called upon to provide. . . . The continuity of experience of our engineering staff acquired through the design, construction and operation of projects such as Hoover, Grand Coulee, Shasta and Glen Canyon dams, and an endless variety of irrigation works in all parts of the West over the past 50 years is invaluable."

The Commissioner is so right. And statements like his could be made to apply to the Corps of Engineers, the Bureau of Public Roads, TVA and other federal agencies —not to mention state and municipal agencies. Quite aside from the debate over public vs. private engineering on specific projects, there should be agreement that government engineering organizations are often repositories of construction information and talent. Their experiences and publications can be vital to private engineering firms.

More power to dedicated government engineers. Our system would not work without them. And Mr. Dominy continues to be right when he says their "planning and construction work automatically creates a need for additional engineering services outside the federal establishment." Private engineering, too, remains a vital part of the system.

Throgs Neck Bridge - Owner: Triborough Bridge and Tunnel Authority; Consultants: Ammann & Whitney, Emil H. Praeger, E. Lionel Pavlo; Contractors for Substructure: Merritt Chapman & Scott Corp., Steers-Snare Joint Venture, Fehlhaber Corp.; Contractor for Paving: Horn Construction Co. and Queens Structures Corp. **Verrazano-Narrows Bridge** - Owner: Triborough Bridge and Tunnel Authority; Consultants: Ammann & Whitney, Emil H. Praeger; Contractor for Tower Piers: Steers-Snare Joint Venture.

PLASTIMENT reduces shrinkage, controls rate of heat development

Throgs Neck Bridge, illustrated above, and the Verrazano-Narrows Bridge, the two largest suspension bridges now under construction in the United States, stand on Plastiment concrete substructures. The nearly completed Throgs Neck Bridge spans 1,800 ft. between towers and stretches 2,910 ft. between anchorages on Long Island and the Bronx. The Verrazano-Narrows Bridge, connecting Staten Island and Brooklyn, will ultimately span 4,260 ft. between towers to become the longest suspension bridge in the world.

Plastiment Retarding Densifier reduced the rate of internal heat development in massive sections of the critical substructures and reduced shrinkage. The use of Plastiment in the tremie concrete improved flow characteristics and minimized the development of laitance. Rapid strength gain was a bonus to the contractor.

Plastiment features are detailed in Bulletin PCD-59. Ask for your copy. District office and dealers in principle cities; affiliate manufacturing companies around the world. In Canada, Sika Chemical of Canada, Ltd.; in Latin America, Sika Panama, S.A.

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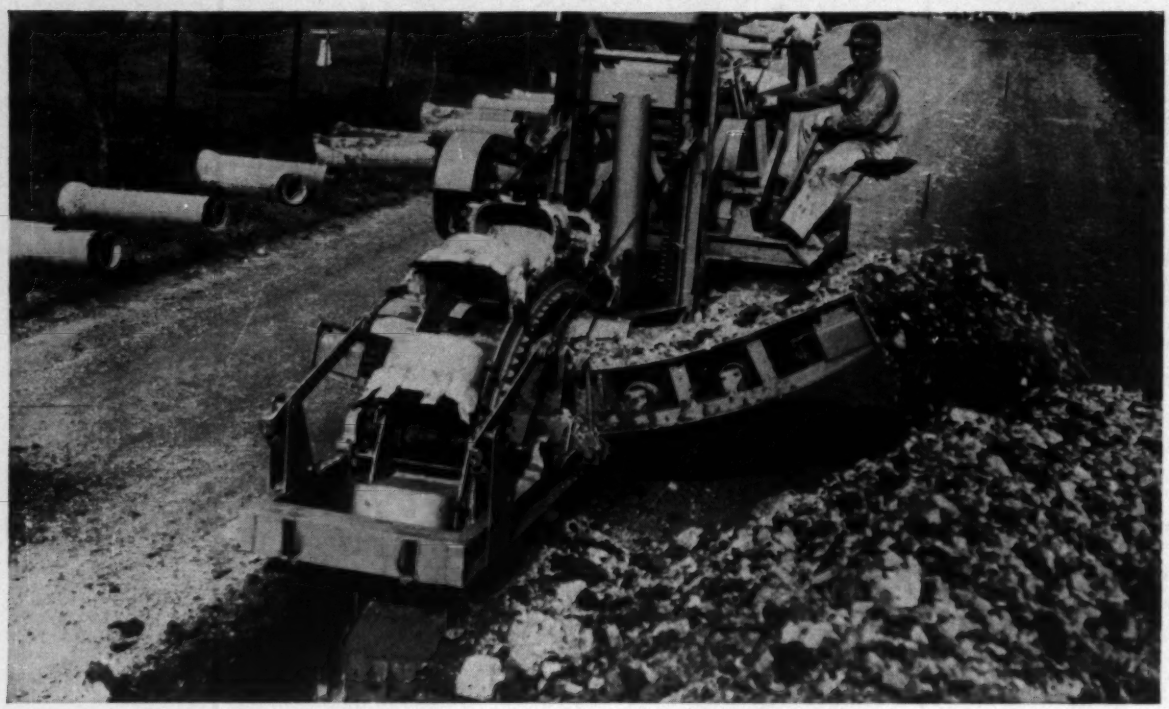

This Parsons Model 150 Trenchliner digs fast—25 fpm. It digs deep—5′9″. It digs wide—26″. And it has 30 digging speeds to suit soil conditions. With transmission shafts mounted on Timken® tapered roller bearings, gears and shafts are kept aligned under heaviest-duty conditions. Maintenance is reduced. Digging goes steadily.

For more than 40 years, construction equipment builders have used Timken tapered roller bearings because: 1) The taper lets Timken bearings take heavy radial and thrust loads in *any* combination. 2) By holding shafts concentric with housings, Timken bearings make closures more effective in keeping lubricant *in,* dirt, dust and moisture *out.* 3) The extra load carrying ability of Timken bearings takes care of the rugged going and provides longer life.

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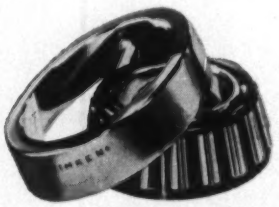

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